

DSC-U20

SERVICE MANUAL

LEVEL 1

Ver 1.0 2002. 10

Revision History



Photo: SILVER model

US Model
Canadian Model
AEP Model
UK Model
E Model
Hong Kong Model
Australian Model
Chinese Model
Korea model
Tourist Model
Japanese Model

Link

• SPECIFICATIONS

• SELF DIAGNOSIS FUNCTION

• ORNAMENTAL PARTS

- INSTRUCTION MANUAL is shown at the end of this document.

DIGITAL STILL CAMERA

SONY®



Cyber-shot U



SPECIFICATIONS

System

Image device 6.72 mm (1/2.7 type) color CCD
Primary color filter

Total pixels number of camera

Approx. 2 110 000 pixels

Effective pixels number of camera

Approx. 2 020 000 pixels

Lens

Single focal lens
f = 5.0 mm (7/32 inches) (35 mm camera conversion: 33 mm (1 5/16 inches))
F2.8

Exposure control

Automatic, Scene selection (three modes)

Data formats

Still images: DCF compliant
(Exif Ver. 2.2 JPEG compliant),
DPOF compatible
Movies: MPEG1 compliant (without audio)

Recording media

"Memory Stick"

Flash

Recommended distance: 0.5 m to 1.8 m (1.6 to 6.0 ft)

Connector

USB jack mini-B

LCD screen

LCD panel used 2.5 cm (1.0 type) TFT drive

Total number of dots

64 460 (293 x 220) dots

Power, general

Used batteries

AAA Nickel Metal Hydride batteries (2) 2.4 V
5 V (from USB cable)

Power consumption (when shooting)

1.45 W

Operating temperature range

0°C to +40°C (32°F to +104°F)

Storage temperature range

-20°C to +60°C (-4°F to +140°F)

Dimensions

84.5 x 39.8 x 28.6 mm
(3 3/8 x 1 5/8 x 1 3/16 inches)

(W/H/D, protruding portions not included)

Mass

Approx. 118 g (4.2 oz) (AAA Nickel Metal Hydride batteries, "Memory Stick," and neck strap included)

BC-CS1 Ni-MH battery charger

Power requirements

AC 100 to 240V 50/60Hz
2.2 W

Output voltage

Size AA: DC 1.8V, 165 mA x 2

Size AAA: DC 1.8V, 70 mA x 2

Dimensions 70 x 29 x 74 mm (2 7/8 x 1 3/16 x 3 inches) (W/H/D)

Mass Approx. 70g (2.5 oz.)

Operating temperature range

0°C to 40°C (32°F to 104°F)

Accessories

- Size AAA Ni-MH batteries (2)

- Ni-MH battery charger (1)

- Power cord (mains lead) (1)

- USB cable (1)

- Neck strap (1)

- "Memory Stick" (8MB) (1)

- CD-ROM (SPVD-008) (1)

- Operating instructions (1)

Design and specifications are subject to change without notice.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK OR DOTTED LINE WITH MARK ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPÉMENTS PUBLIÉS PAR SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer.

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, through functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit Board Repairing
 - Keep the temperature of the soldering iron around 270°C during repairing.
 - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
 - Be careful not to apply force on the conductor when soldering or unsoldering.

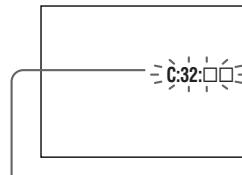
COVER

SELF-DIAGNOSIS FUNCTION

[Description on Self-diagnosis Display]

Self-diagnosis display

The camera has a self-diagnosis display. This function displays the camera condition with five-digits (a combination of a letter and figures) on the LCD screen. If this occurs check the following code chart. The five-digits display informs you of the camera's current condition. The last two digits (indicated by □□) will differ depending on the state of the camera.



Self-diagnosis display

- C: □□: □□

You can reverse the camera malfunction yourself. (However, contact your Sony dealer or local authorized Sony service facility when you cannot recover from the camera malfunction.)

- E: □□: □□

Contact your Sony dealer or local authorized Sony service facility.

Display Code	Countermeasure	Cause	Caution Display During Error
C:32:□□	Turn the power off and on again.	Trouble with hardware.	SYSTEM ERROR
C:13:□□	Format the "Memory stick".	Unformatted memory stick is inserted.	FORMAT ERROR
	Insert a new "Memory Stick".	Memory stick is broken.	MEMORY STICK ERROR
E:61:□□	Checking of lens drive circuit.	When failed in the focus initialization.	—
E:91:□□	Checking of flash unit or replacement of flash unit.	Abnormality when flash is being charged.	—

1. MAIN PARTS

Note:

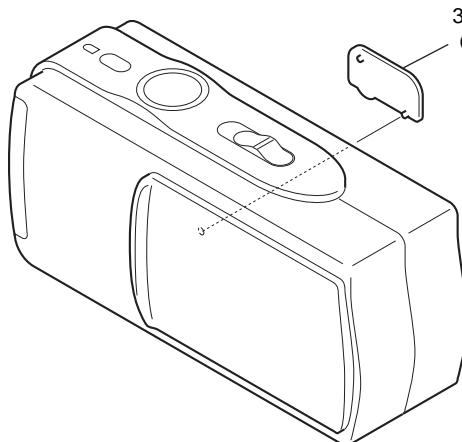
- Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The parts numbers of such as a cabinet are also appeared in this section. Refer to the parts number mentioned below the name of parts to order.
- Abbreviation

AUS: Australian model	HK : Hong Kong model	J : Japanese model
CH : Chinese model	JE : Tourist model	KR : Korean model
CND: Canadian model		

The components identified by mark \triangle or dotted line with mark \triangle are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque \triangle sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

1. ORNAMENTAL PARTS

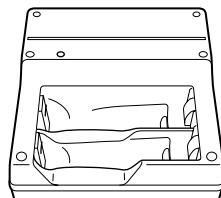


USB cover
3-076-539-01 (SILVER)
3-076-539-11 (BLACK, BLUE)
(When change it, need dismantle the set.)

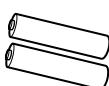
Checking supplied accessories.



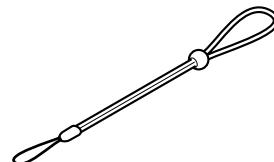
Power cord (1)
 \triangle 1-696-819-11 (AUS)
 \triangle 1-769-608-11 (AEP, E)
 \triangle 1-776-985-11 (KR)
 \triangle 1-782-476-11 (CH)
 \triangle 1-783-374-11 (UK, HK)
 \triangle 1-790-107-22 (US, CND)
 \triangle 1-790-732-11 (JE, J)



Battery charger (BC-CS1) (1)
 \triangle 1-477-226-42 (KR)
 \triangle 1-477-227-12 (J)
 \triangle 1-477-227-22 (US, CND)
 \triangle 1-477-227-33
 \triangle (AEP, UK, E, AUS, HK, JE)
 \triangle 1-477-227-52 (CH)



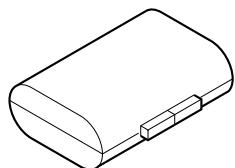
Nickel-Metal hybrid battery
(NH-AAA-DI) (2)



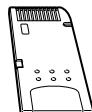
Neck strap (1)
3-076-620-01



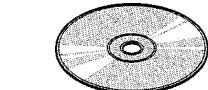
USB cable (1)
1-823-932-11



AAA battery case (1)
3-076-474-01



"Memory Stick" (8MB) (1)



CD-ROM
(SPVD-008 USB driver) (1)
3-077-012-02 (US, CND, J)
3-077-023-02 (AEP, UK, E, HK,
AUS, CH, JE, KR)

Other accessories

- \triangle 1-569-007-11 ADAPTOR, CONVERSION (E, JE)
- \triangle 1-569-007-12 ADAPTOR, CONVERSION 2P (E)
- 3-065-665-05 MANUAL, INSTRUCTION (JAPANESE) (J)
- 3-078-812-01 OPERATING INSTRUCTIONS (JAPANESE) (J)
- 3-078-812-11 OPERATING INSTRUCTIONS (ENGLISH)
(US, CND, AEP, UK, E, AUS, CH, HK, JE)
- 3-078-812-21 OPERATING INSTRUCTIONS
(FRENCH, GERMAN) (CND, AEP)
- 3-078-812-31 OPERATING INSTRUCTIONS
(SPANISH, PORTUGUESE) (AEP, E, JE)
- 3-078-812-41 OPERATING INSTRUCTIONS
(ITALIAN, DUTCH) (AEP)
- 3-078-812-51 OPERATING INSTRUCTIONS
(TRADITIONAL CHINESE,
SIMPLIFIED CHINESE) (E, HK, CH, JE)
- 3-078-812-61 OPERATING INSTRUCTIONS
(SWEDISH, RUSSIAN) (AEP)
- 3-078-812-71 OPERATING INSTRUCTIONS (ARABIC) (E)
- 3-080-088-11 OPERATING INSTRUCTIONS (KOREAN) (KR)

SONY®

Digital Still Camera

Operating Instructions

Before operating the unit, please read this manual thoroughly, and retain it for future reference.

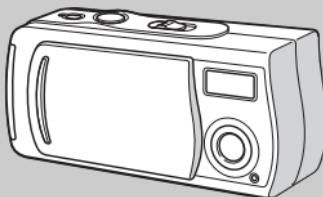
Owner's Record

The model and serial numbers are located on the bottom. Record the serial number in the space provided below.

Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. DSC-U20

Serial No. _____



Cyber-shot U



MEMORY STICK™

DSC-U20

© 2002 Sony Corporation

3-078-812-11(1)

Getting started _____

Shooting still images _____

Viewing still images _____

Enjoying movies _____

Deleting images _____

Copying images _____

Troubleshooting _____

Additional information _____

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WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

For the Customers in the U.S.A.



This symbol is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

If you have any questions about this product, you may call:

Sony Customer Information Services Center
1-800-222-SONY (7669)

The number below is for the FCC related matters only.

Declaration of Conformity

Trade Name: SONY

Model No.: DSC-U20

Responsible Party: Sony Electronics Inc.

Address: 680 Kinderkamack Road, Oradell,
NJ 07649 U.S.A.

Telephone No.: 201-930-6972

This device complies with Part 15 of the FCC Rules.

Operation is subject to the following two conditions: (1)

This device may not cause harmful interference, and
(2) this device must accept any interference received,
including interference that may cause undesired
operation.

CAUTION

You are cautioned that any changes or modifications not
expressly approved in this manual could void your
authority to operate this equipment.

Note:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The supplied interface cable must be used with the equipment in order to comply with the limits for a digital device pursuant to Subpart B of Part 15 of FCC Rules.

For the Customers in the U.S.A. and Canada

RECYCLING NICKEL METAL HYDRIDE BATTERIES

Nickel Metal Hydride batteries are recyclable.

You can help preserve our environment by returning your used rechargeable batteries to the collection and recycling location nearest you.

For more information regarding recycling of rechargeable batteries, call toll free 1-800-822-8837, or visit <http://www.rbrc.org/>

CAUTION:

Do not handle damaged or leaking Nickel Metal Hydride batteries.



Notice for the customers in the United Kingdom

A moulded plug complying with BS 1363 is fitted to this equipment for your safety and convenience.

Should the fuse in the plug supplied need to be replaced, a 5 AMP fuse approved by ASTA or BSI to BS 1362, (i.e., marked with \triangle or \diamond mark) must be used.

If the plug supplied with this equipment has a detachable fuse cover, be sure to attach the fuse cover after you change the fuse. Never use the plug without the fuse cover. If you should lose the fuse cover, please contact your nearest Sony service station.

CAUTION

TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT, FULLY INSERT.

Attention for the Customers in Europe

This product has been tested and found compliant with the limits sets out in the EMC Directive for using connection cables shorter than 3 meters.

Attention

The electromagnetic fields at the specific frequencies may influence the picture and sound of this camera.

Notice

If static electricity or electromagnetism causes data transfer to discontinue midway (fail), restart the application or disconnect and connect the USB cable again.

Certain countries may regulate disposal of the battery used to power this product. Please consult with your local authority.

“Memory Stick”



For the Customers in the U.S.A. and Canada

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:

(1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRABLE OPERATION.

THIS CLASS B DIGITAL APPARATUS COMPLIES WITH CANADIAN ICES-003.

Before using your camera

Trial recording

Before you record one-time events, you may want to make a trial recording to make sure that the camera is working correctly.

No compensation for contents of the recording

Contents of the recording cannot be compensated for if recording or playback is not possible due to a malfunction of your camera or recording media, etc.

Notes on image data compatibility

- This camera conforms with the Design rule for Camera File system universal standard established by the JEITA (Japan Electronics and Information Technology Industries Association).
- Playback of images recorded with your camera on other equipment and playback of images recorded or edited with other equipment on your camera are not guaranteed.

Note on "Memory Stick"

This camera turns off whenever you remove the batteries or the "Memory Stick." Do not open the battery/"Memory Stick" cover while the access lamp is on.

Precaution on copyright

Television programs, films, video tapes, and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the provision of the copyright laws.

Do not shake or strike the camera

In addition to malfunctions and inability to record images, this may render the "Memory Stick" unusable or image data breakdown, damage or loss may occur.

LCD screen, LCD finder (only models with a finder) and lens

- The LCD screen and the LCD finder are manufactured using extremely high-precision technology so over 99.99% of the pixels are operational for effective use. However, there may be some tiny black points and/or bright points (white, red, blue or green in color) that constantly appear on the LCD screen and the LCD finder. These points are normal in the manufacturing process and do not affect the recording in any way.
- Be careful when placing the camera near a window or outdoors. Exposing the LCD screen, the LCD finder or the lens to direct sunlight for long periods may cause malfunctions.

Do not get the camera wet

When taking pictures outdoors in the rain or under similar conditions, be careful not to get the camera wet. If moisture condensation occurs, see page 94 and follow the instructions on how to remove it before using the camera.

Back up recommendation

To avoid the potential risk of data loss, always copy (back up) data to a disk.

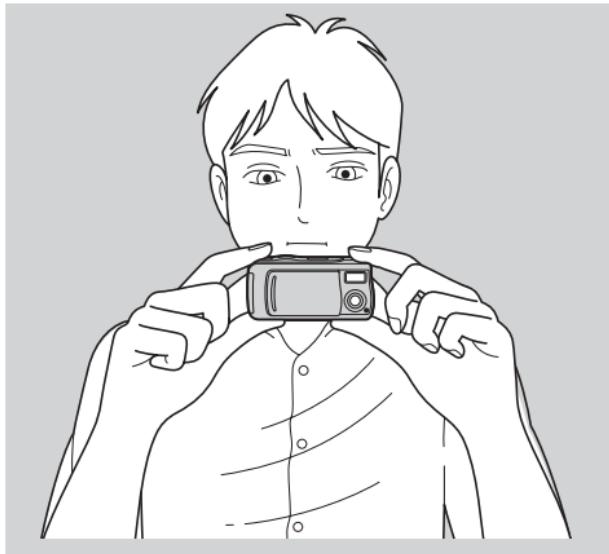
The pictures used in this manual

The photographs used as examples of pictures in this manual are reproduced images, and are not actual images shot using this camera.

Trademarks

- “Memory Stick,” Memory Stick and “MagicGate Memory Stick” are trademarks of Sony Corporation.
- “Memory Stick Duo” and **MEMORY STICK DUO** are trademarks of Sony Corporation.
- “MagicGate” and **MAGIC GATE** are trademarks of Sony Corporation.
- Microsoft and Windows are registered trademarks of the U.S. Microsoft Corporation in the United States and other countries.
- Macintosh, Mac OS, and QuickTime, are trademarks or registered trademarks of Apple Computer, Inc.
- In addition, system and product names used in this manual are, in general, trademarks or registered trademarks of their respective developers or manufacturers. However, the TM or [®] marks are not used in all cases in this manual.

How to hold the camera



When shooting an image with the camera, be careful not to obstruct the flash or the lens with your fingers.

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Troubleshooting

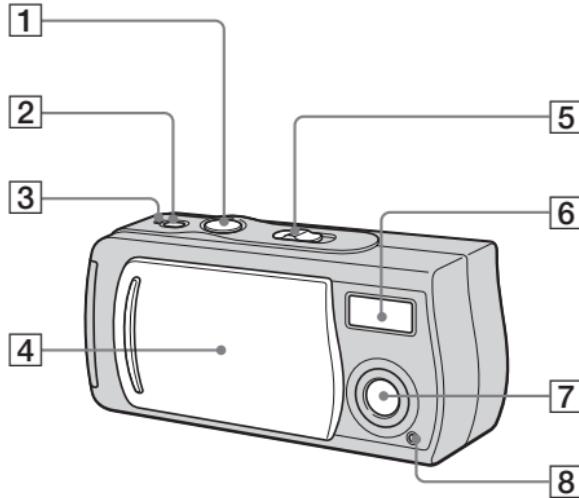
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Identifying the parts

See the pages in parentheses for details of operation.



- 1** **Shutter button** (27)
- 2** **POWER button** (19)
- 3** **POWER lamp** (19)
- 4** **Lens cover** (19)
- 5** **Mode switch**

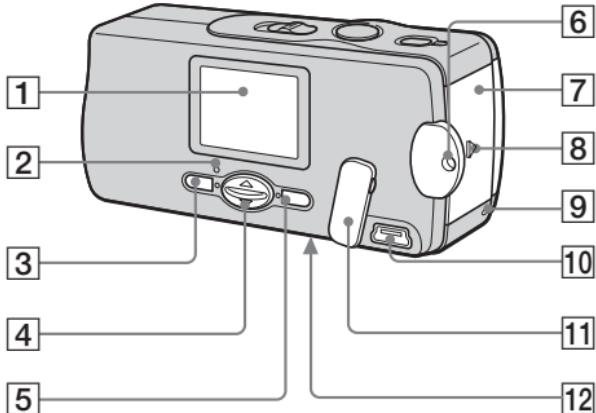
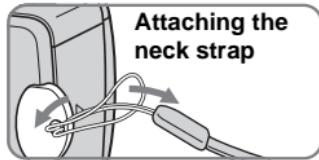
PLAY: **To view images** (43)

STILL: **To shoot still images** (26)

To shoot five images continuously
(39)

MOVIE: **To shoot movies** (49)

- 6** **Flash** (32)
- 7** **Lens**
- 8** **Self-timer lamp** (31)



- 1 LCD screen
- 2 Flash charge lamp (orange) (33)
- 3 MENU button
- 4 Control button
Menu on: Δ/∇
Menu off: $\sharp/SCENE$ (32, 36)
- 5 EXEC button
- 6 Hook for neck strap
- 7 Battery/"Memory Stick" cover
- 8 OPEN button (15)
- 9 Access lamp (23)
- 10 USB jack (69)
- 11 USB jack cover
- 12 RESET button (bottom surface) (81)

How to use the control button and EXEC button

To change the current settings of the camera, bring up the menu, and use the control button to make the changes.

For each item, press MENU and press Δ/∇ on the control button to select the desired value, then press EXEC to make the setting. Press MENU, then the menu disappears from the LCD screen.



Preparing batteries

Use the following batteries in this camera.

Acceptable batteries

Size AAA Nickel Metal Hydride batteries (2)

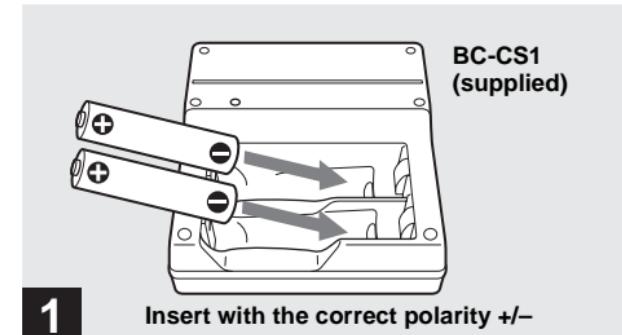
- NH-AAA-DI (2) (supplied)
- NH-AAA-2DI twin-pack (not supplied)

Batteries that cannot be used*

Manganese batteries, lithium batteries, Ni-Cd batteries, alkaline batteries

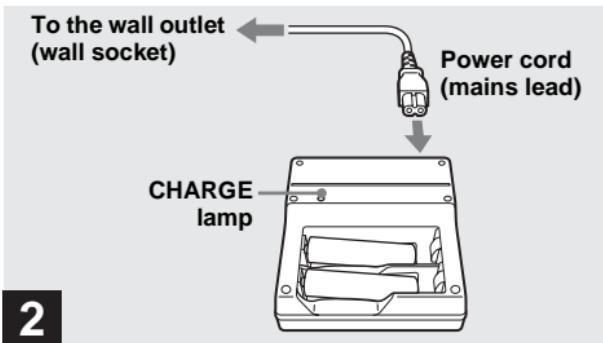
* When the above batteries are used, operation is not guaranteed due to possible voltage drops or other characteristics of the batteries. In addition, the battery remaining indicator is not displayed correctly.

Charging the batteries



→ **Insert Nickel Metal Hydride batteries into the charger (supplied).**

- Be sure to charge the Nickel Metal Hydride batteries supplied with your camera before using them for the first time.
- We recommend charging the batteries in an ambient temperature of between 10°C to 30°C (50°F to 86°F). If the batteries are charged in an environment where the temperature is outside that range, the batteries may not charge efficiently.
- Connect the battery charger to an easily accessible wall outlet (wall socket) close by. Note that the battery charger is not isolated from the power source even if the CHARGE lamp is off. If some trouble occurs while using the charger, immediately shut off the power by disconnecting the plug out of the wall outlet (wall socket).



2

→ **Connect the charger to a wall outlet (wall socket) using the power cord (mains lead).**

The CHARGE lamp lights up when charging begins, and goes off when charging is completed. It takes about 13 hours to completely charge the batteries.

- When charging is finished, disconnect the power cord (mains lead) from the wall outlet (wall socket), and remove the Nickel Metal Hydride batteries from the charger.
- Always use the case supplied when transporting the Nickel Metal Hydride batteries. If the positive and negative terminals come into contact with metallic material and are shorted, the batteries could overheat or catch fire.

Charging the Nickel Metal Hydride batteries

- If the poles of the Nickel Metal Hydride batteries are dirty, the batteries may not charge properly. Occasionally clean the poles of the batteries and the terminals of the charger by wiping them with a dry cloth.
- At the time of purchase, or when the Nickel Metal Hydride batteries haven't been used for a long time, they may not fully charge. This is typical of this type of battery, and is not a malfunction. If this happens, several cycles of using the battery until it is completely drained and then charging the battery fully should correct the problem.
- Even when Nickel Metal Hydride batteries are not being used they lose their charge naturally over time. It is recommended that you recharge the batteries just before using them.
- If you recharge Nickel Metal Hydride batteries before fully using up the existing charge, the low battery warning may be displayed sooner than expected. This is called the "memory effect."* If this problem occurs, charging the batteries only after using up the existing charge will correct it.

* The "memory effect" – the situation in which the capacity of the battery is temporarily lowered.

Precautions to be observed when charging the batteries

- Do not charge any other batteries except Sony Nickel Metal Hydride batteries in the charger supplied with your camera. If you try to charge any other type of battery (e.g., manganese batteries, alkaline dry cells, or primary lithium batteries) than the batteries specified, those batteries may leak, overheat, or explode, causing the danger of burns or other injuries.
- Be sure to charge both Nickel Metal Hydride batteries at the same time.
- When the batteries are charged, use them only in an environment where the temperature range is 10°C to 30°C (50°F to 86°F). Efficient charging may not be possible outside this range.
- Do not charge fully charged Nickel Metal Hydride batteries again. Otherwise, there is a danger of leaks, explosions, excessive heat, fire, or electric shock.
- Do not peel off the external seals or damage the batteries. Never use batteries from which the seals have been partially or completely removed, or batteries that have been split in any way.

Charging time

Nickel Metal Hydride battery	Charging time
NH-AAA-DI × 2 (supplied)	Approx. 13 hours

This represents the time required to charge fully depleted Nickel Metal Hydride batteries using the supplied BC-CS1 charger in an environment where the ambient temperature is 25°C (77°F).

- It takes about 13 hours to completely charge the batteries. The CHARGE lamp may remain lit longer than 13 hours, but this is not a malfunction.
- Do not remove the batteries while charging is still in progress. If the power supply is interrupted by a power failure or other reason either during charging or after charging has finished, charging starts over and the batteries are charged again for approximately 13 hours.
- If you use the ACC-UNQ STAMINA "Super Quick charge" kit (not supplied), the batteries will charge faster.

Charging time

Size AAA Nickel Metal Hydride batteries

2 batteries: Approx. 1 hour 15 minutes

4 batteries: Approx. 2 hours 30 minutes

Battery remaining indicator (when using Nickel Metal Hydride batteries)

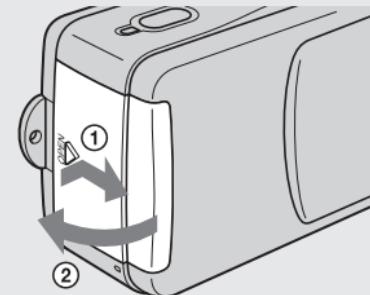
As the battery power decreases with use, the battery remaining indicator displays the amount of power remaining using the following symbols.

Battery remaining indicator	Battery remaining guidelines
	Sufficient power remaining
	Battery half full
	Battery low, recording/playback will stop soon.
	Change the batteries for fully charged ones, or charge these batteries. (Battery remaining indicator flashes.)

- If the LCD screen display is off, set [DISPLAY] in [] to [ON] with MENU and **▲▼** on the control button to turn it on.
- Based on the conditions under which the camera is being used and the state of the charge, or on the environment, this information may not be correctly indicated.
- The battery remaining indicator is not displayed in USB connecting.

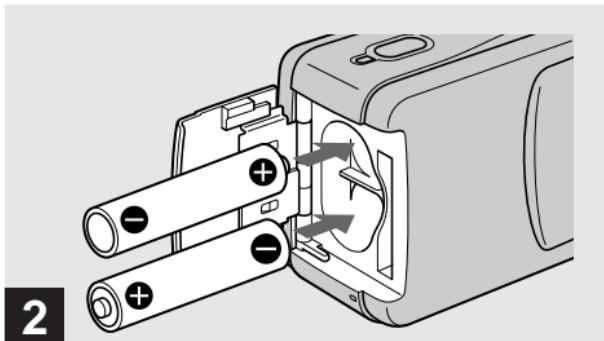
Inserting the batteries

1



→ Open the battery/“Memory Stick” cover.

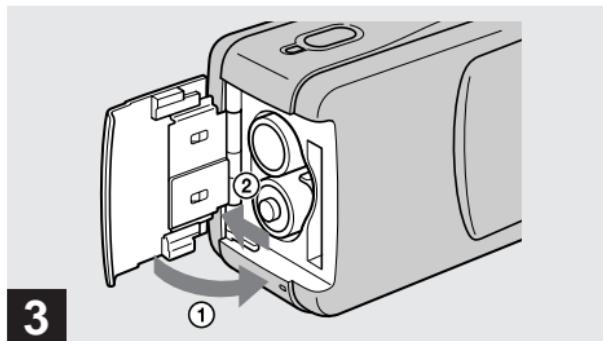
Slide the cover in the direction of the arrow ① while pressing OPEN. The battery/“Memory Stick” cover opens in the direction the arrow ②.



→ **Insert the batteries.**

Match the +/– poles of the batteries to the +/– marks inside the battery case.

- From time to time, use a dry cloth to wipe any dirt off of the battery terminals and the contacts inside the battery/“Memory Stick” cover. Skin oil and other dirt on the battery terminals and contacts can significantly shorten the operating time provided by the batteries.



→ **Close the battery/“Memory Stick” cover.**

Close the battery/“Memory Stick” cover while holding the batteries in. Make sure the cover is closed securely.

To remove the batteries

Hold the camera with the battery/“Memory Stick” cover facing upward, open the cover, and remove the batteries.

- Be careful not to drop the batteries when opening or closing the battery/“Memory Stick” cover.

Battery life and number of images that can be recorded/viewed

The tables show the approximate battery life and the number of images that can be recorded/viewed with a fully charged batteries at a temperature of 25°C (77°F) in auto adjustment mode. The numbers of images that can be recorded or viewed take into account changing the supplied "Memory Stick" as necessary. Note that the actual numbers may be less than indicated depending on the conditions of use.

Shooting still images

Under the average conditions^{*1)}

Image size	NH-AAA-DI (2) (supplied)	
No. of images	Battery life (min.)	
1632×1224	Approx. 120	Approx. 60

^{*1)} Shooting in the following situations:

- [LCD LIGHT] is set to [ON]
- Shooting one time every 30 seconds
- The flash strobes once every two times
- The power turns on and off once every ten times

Shooting continuously^{*2)}

Image size	NH-AAA-DI (2) (supplied)		
	LCD LIGHT	No. of images	Battery life (min.)
1632×1224	ON	Approx. 1600	Approx. 60
	OFF	Approx. 1800	Approx. 70
640×480	ON	Approx. 1600	Approx. 60
	OFF	Approx. 1800	Approx. 70

^{*2)} Shooting in the following situations:

- The flash mode is set to  (no flash)
- Continuous shooting approximately every 2.5 seconds

Viewing still images^{*3)}

Image size	NH-AAA-DI (2) (supplied)	
	No. of images	Battery life (min.)
1632×1224	Approx. 2400	Approx. 120
1280×960	Approx. 2400	Approx. 120
640×480	Approx. 2400	Approx. 120

^{*3)} Viewing single images in order at about 3-second intervals with LCD LIGHT ON

- Still images with an image size of 1280×960 can only be viewed on this camera.

Shooting movies^{*4}

NH-AAA-DI (2) (supplied)

	LCD LIGHT	Battery life (min.)
Continuous recording	ON	Approx. 60
	OFF	Approx. 70

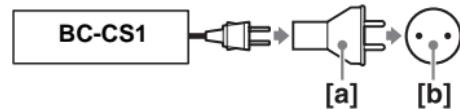
^{*4}) The maximum shooting time is 15 seconds

- The remaining indicator will decrease in the following situations:
 - The surrounding temperature is low
 - The flash is used
 - The camera has been turned on and off many times
 - [LCD LIGHT] is set to [ON]
 - The battery power is low
 - The battery capacity decreases as you use it more and more and as time passes (page 97)

Using your camera abroad

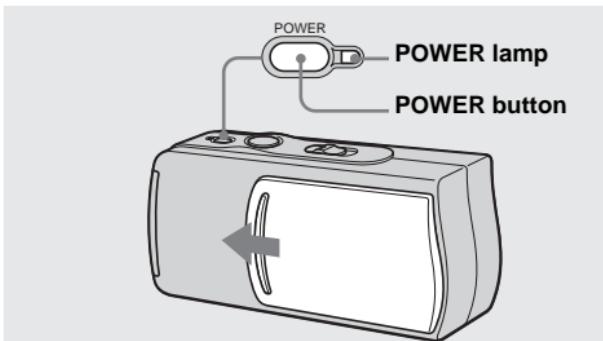
Power sources

You can use your camera in any country or area with the supplied battery charger within 100 V to 240 V AC, 50/60 Hz. Use a commercially available AC plug adaptor **[a]**, if necessary, depending on the design of the wall outlet (wall socket) **[b]**.



- Do not use an electronic transformer (travel converter), as this may cause a malfunction.

Turning on/off your camera



→ Slide the lens cover in the direction of the arrow or press the POWER button.

When you open the lens cover or press the POWER button, the power is automatically on. The POWER lamp (green) lights up. When you turn on your camera for the first time, the DATE NOTATION screen appears on the LCD screen (page 20).

To turn off the power

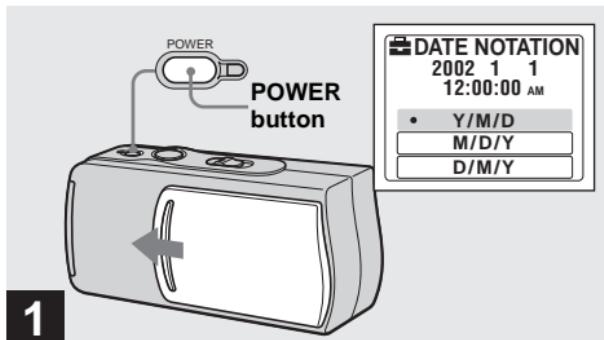
Slide the lens cover in the opposite direction of the arrow or press the POWER button again. The POWER lamp goes out, and the camera turns off.

- Slide the lens cover closed until it clicks into place.
- If you open the lens cover too quickly, the camera might not turn on. If this happens, close the cover and then open it again more slowly.

Auto power-off function

If you do not operate the camera for about 3 minutes during shooting or viewing or when performing setup, the camera turns off automatically to prevent wearing down the battery. The auto power-off function also will not operate when a connector is plugged into the USB jack.

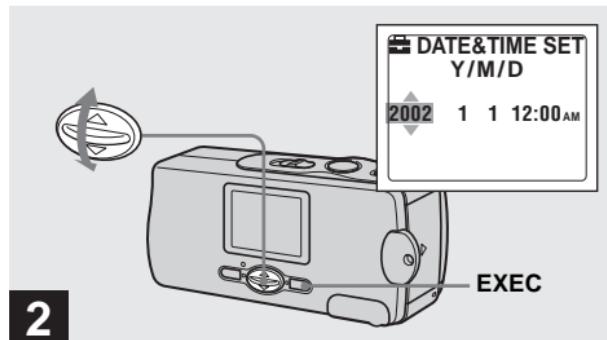
Setting the date and time



→ **Slide the lens cover in the direction of the arrow or press the POWER button to turn on the power.**

The POWER lamp (green) lights up and the DATE NOTATION screen appears on the LCD screen.

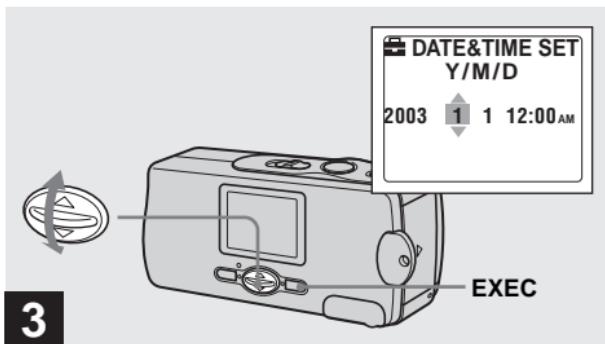
- This operation is available no matter what position the mode switch is in.
- To change the date and time, press MENU and select [DATE&TIME SET] in [CLOCK SET] under [MENU] (page 92), then perform the procedure from step 3.



→ **Select the desired date display format with ▲/▼ on the control button, then press EXEC.**

Select from [Y/M/D] (year/month/day), [M/D/Y] (month/day/year) or [D/M/Y] (day/month/year). Then DATE&TIME SET screen appears on the LCD screen.

- If the rechargeable button battery, which provides the power for saving the time data, is ever fully discharged (page 94), the DATE NOTATION screen will appear again. When this happens, reset the date and time, by starting from step 2.

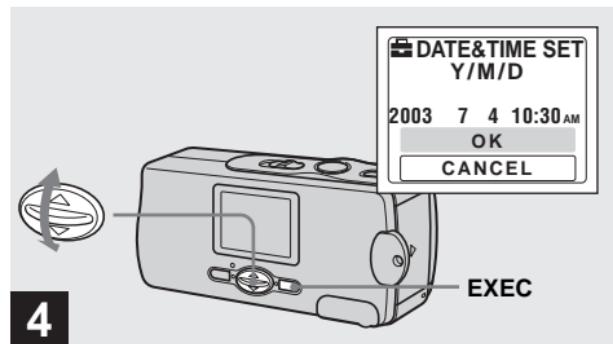


→ Set the numeric value with **▲/▼** on the control button, then press **EXEC**.

The item to be set is indicated with **▲/▼**.

After entering the number, **▲/▼** moves to the next item.
Repeat this step until all of the items are set.

- If you selected [D/M/Y] in step **2**, set the time on a 24-hour cycle.

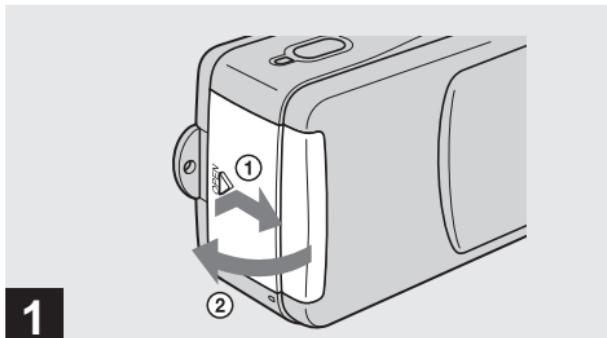


→ Select **[OK]** with **▲/▼** on the control button, then press **EXEC**.

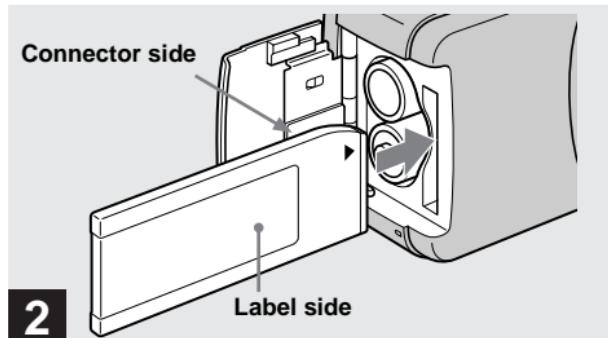
The date and time are entered and the clock starts to keep time.

- If you make a mistake, select **[CANCEL]** in step **4** to display the DATE NOTATION screen, then repeat the procedure from step **2**.

Inserting and removing a “Memory Stick”



1



2

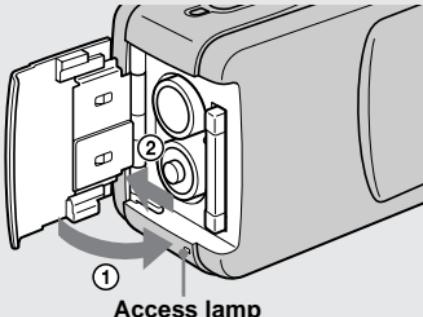
→ Open the battery/“Memory Stick” cover.

Slide the cover in the direction of the arrow ① while pressing OPEN. The battery/“Memory Stick” cover opens in the direction the arrow ②.

→ Insert the “Memory Stick.”

Holding the “Memory Stick” as shown in the illustration, insert it all the way in until it clicks.

- Push the “Memory Stick” all of the way in so that it is securely seated in the connector. If the “Memory Stick” is not inserted correctly, you may not be able to record or display images in the “Memory Stick.”
- Be careful not to drop the batteries when opening or closing the battery/“Memory Stick” cover.



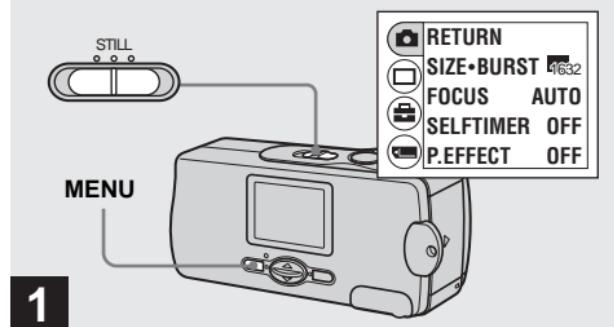
3

→ Close the battery/“Memory Stick” cover.

To remove a “Memory Stick”

Open the battery/“Memory Stick” cover, then push the “Memory Stick” to pop it out.

- When the access lamp is lit up, it means that image data is being read or written. Never open the battery/“Memory Stick” cover at this time, as the data may be damaged.

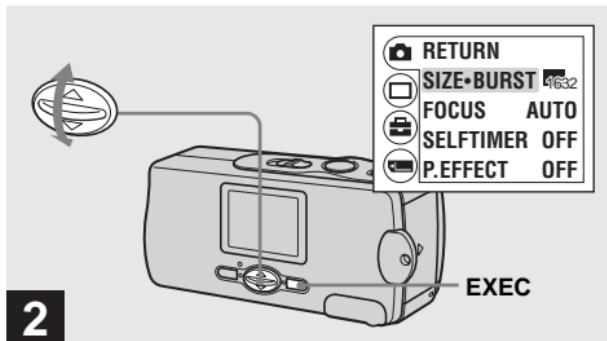


1

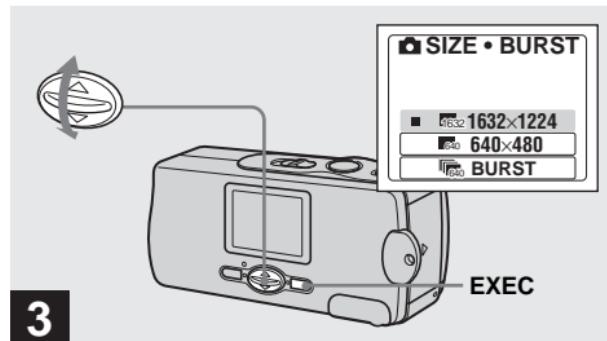
→ Set the mode switch to STILL, and turn on the power, then press MENU.

The menu appears on the LCD screen.

- Open the lens cover when closed.



→ Select [CAMERA] with **▲/▼** on the control button, then press EXEC.
Select [SIZE-BURST] with **▲/▼** on the control button, then press EXEC.



→ Select the desired image size with **▲/▼** on the control button, then press EXEC.

The image size is set.
When the setting is complete, press MENU so that the menu disappears from the LCD screen.

- The image size selected here is maintained even when the power is turned off.

Image size

You can choose the image size (number of pixels) according to the kind of images you want to shoot. Larger image sizes result in a larger data size, which means fewer images that you can record in a “Memory Stick.”

Choose an image size appropriate for the kind of images you want to shoot.

You can choose from the following table.

Image size	Usage
1632×1224	Printing A4 size images
640×480	Attaching to e-mail

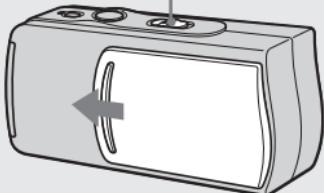
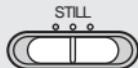
Number of images that can be saved in a “Memory Stick”

(Units: number of images)

Capacity	Image size 1632×1224	Image size 640×480
8MB	15	80
16MB	30	160
32MB	61	325
64MB	122	655
128MB	246	1315

- Image size is the size when viewing the images on a personal computer. Images viewed on the LCD screen of the camera all appear the same size.
- The actual number of images may differ depending on the shooting conditions.
- The image size value (e.g., 1632×1224) indicates the number of pixels.

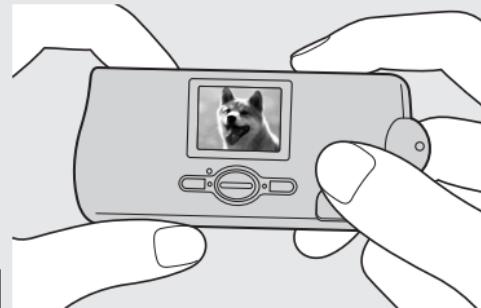
Basic still image shooting (using auto adjustment mode)



1

→ Set the mode switch to **STILL**, and slide the lens cover to turn on the power.

- Still images are recorded in JPEG format.
- The exposure and focus are adjusted automatically at the factory setting.

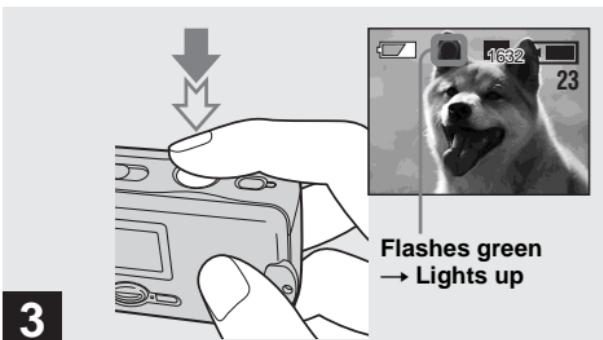


2

→ Hold the camera steadily with both hands and position the subject in the center of the LCD screen.

Do not cover the lens or flash with your fingers.

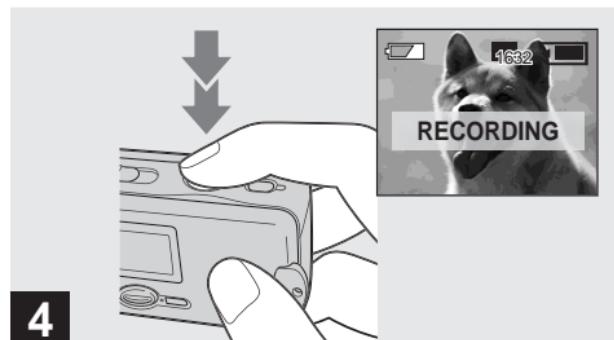
- When recording outdoors during clear weather or under other intense light, undesired light (ghosting) may enter the screen. If this happens, shade the lens with your hand or other object while recording.
- The exposure and focus are adjusted to the center of the LCD screen.



→ **Press and hold the shutter button halfway down.**

The beep sounds but the image is not yet recorded. When the AE/AF lock indicator changes from flashing to lighted up, the camera is ready for shooting.

- If you release the shutter button, the recording will be canceled.
- The minimum focal distance to the subject is 10 cm (4 inches).



→ **Press the shutter button fully down.**

The beep sounds. “RECORDING” appears on the LCD screen, and the image will be recorded in the “Memory Stick.” When “RECORDING” disappears, you can shoot the next image.

- When operating the camera using batteries, if you do not operate the camera for about three minutes during recording or playback, the camera turns off automatically to prevent wearing down the batteries (page 19).

Auto Focus

When you try to shoot a subject that is difficult to focus on, the AE/AF lock indicator changes to flashing slowly.

The Auto Focus function may have difficulty working under the following conditions. In such cases, release the shutter button, then recompose the shot and focus again. If the Auto Focus function can still not bring the subject into focus, use the Focus preset function (page 37).

- The subject is distant from the camera and dark.
- The contrast between the subject and its background is poor.
- The subject is seen through glass, such as a window.
- A fast-moving subject.
- The subject reflects or has a lustrous finish, such as a mirror or a luminous body.
- A flashing subject.

LCD light

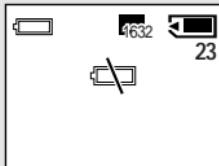
You can use [LCD LIGHT] under [] with MENU and $\blacktriangle/\blacktriangledown$ on the control button to turn the LCD light on and off. This is useful for extending the battery life.

- This camera is equipped with a reflective-type LCD screen that allows you to see the LCD screen even when the LCD light is turned off, as long as there is some ambient illumination.
- Even if the LCD light setting is [OFF], the LCD light will turn on when menu operations are being performed. When the menu operation is completed, the LCD light will turn off again.

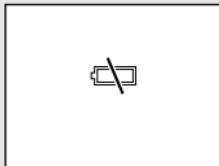
LCD screen display during shooting

You can use [DISPLAY] under [] with MENU and **▲/▼** on the control button to turn the display on and off. This is useful when recording under conditions where it is difficult to check the image on the LCD screen.

When [DISPLAY] is
[ON]



When [DISPLAY] is
[OFF]

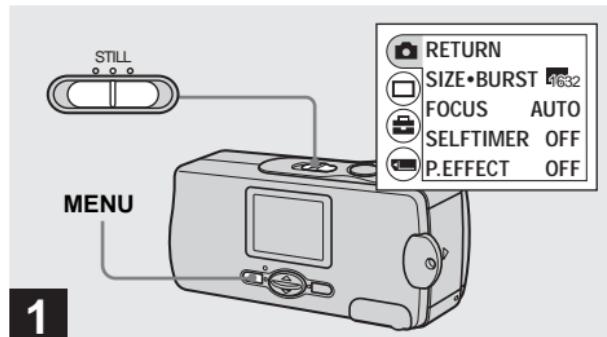


(Displays all indicators
that can be displayed)

(Displays warnings
only)

- For detailed descriptions of the indicators, see page 99.
- Indicators on the LCD screen are not recorded.

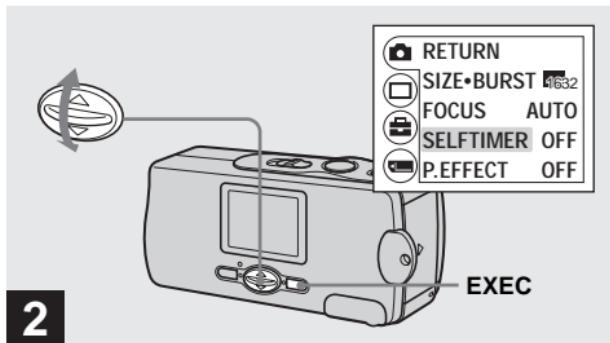
Using the self-timer



→ Set the mode switch to **STILL**, and press **MENU**.

The menu appears on the LCD screen.

- You can also carry out this operation when the mode switch is set to **MOVIE**.

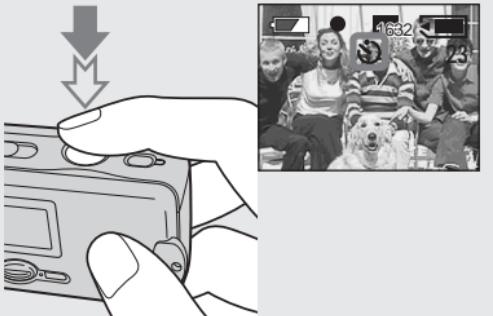


→ Select [CAMERA] with **▲/▼** on the control button, then press EXEC.
Select [SELFTIMER] with **▲/▼** on the control button, then press EXEC.



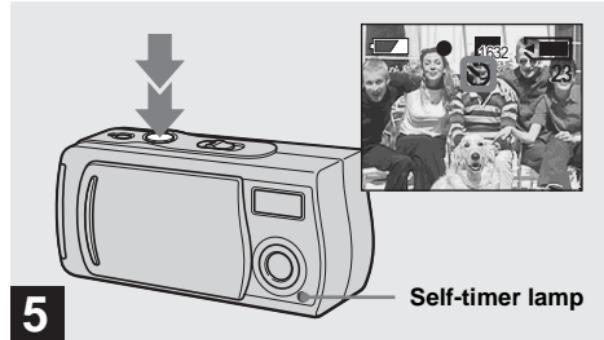
→ Select [ON] with **▲/▼** on the control button, then press EXEC.

When you press MENU, the menu disappears. The **⌚** (self-timer) indicator appears on the LCD screen.



4

→ Center the subject in the LCD screen, and press and hold the shutter button halfway down.



5

→ Press the shutter button fully down.

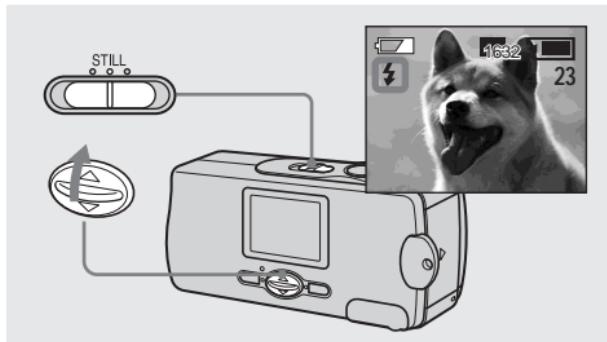
The self-timer lamp (page 10) flashes in red and the beep sounds. The image will be shot after approximately 10 seconds.

To cancel the self-timer in the middle of the operation

Close the lens cover or press POWER to turn off the power.

- If you press the shutter button while standing in front of the camera, the focus and the exposure may not be correctly set.

Selecting a flash mode



→ Set the mode switch to STILL, and press ▲ (⌚) on the control button repeatedly to select a flash mode.

Each time you press ▲ (⌚), the indicator changes as follows:

No indicator (Auto): Based on the lighting conditions, the camera will decide if there is enough light, and will use the flash accordingly (factory setting).

⌚ (Red-eye reduction): Flash mode is set to Auto, and the red-eye reduction operates if the flash strobes.

⌚ (Forced flash): The flash strobes regardless of the surrounding brightness.

⌚ (No flash): The flash does not strobe.

- You cannot use the flash in the Burst mode.
- If the menu is currently displayed, press MENU first so that the menu disappears.
- When using the Auto,  (Red-eye reduction) or  (Forced flash) mode, you may notice some noise in the image when you look at the LCD screen in a dark place, but this will have no effect on the shot image.
- While charging the flash, the flash charge lamp flashes. After the charging is complete, the lamp goes out.
- When you press the shutter button halfway down while the flash is strobing, the flash charge lamp turns on.

To reduce the red-eye phenomenon when shooting live subjects

When the red-eye reduction is selected,  indicator appears on the LCD screen, and the flash pre-strokes before shooting to reduce the red-eye phenomenon.



- Red-eye reduction may not produce the desired effects depending on individual differences, the distance to the subject, if the subject does not see the pre-strobe, or other conditions.

Shooting according to scene conditions - Scene Selection

When shooting portraits, shooting night scenes or shooting landscapes, use the modes listed below to improve the quality of your images.

Soft snap mode



Soft snap mode

The soft snap mode lets you shoot skin colors in brighter and warmer tones for more beautiful pictures. In addition, the soft focus effect creates a gentle atmosphere for portraits of people, flowers, etc.



Illumination snap mode



■ Illumination snap mode

The illumination snap mode lets you capture beautiful images of both subjects and night scene backgrounds at the same time. In addition, the cross filter effect enhances street lamps or other lights with cross-shaped rays.

- The flash strobos in (Red-eye reduction) mode, and the recommended subject distance is 0.5 to 1.2 m.
- When setting the focus to [AUTO], the focus is adjusted to approximately 1 m to ∞ (infinite). To record subjects closer than 1 m, use the Focus preset (page 37).
- When shooting in the Burst mode, the recording interval may be longer.



Vivid nature mode

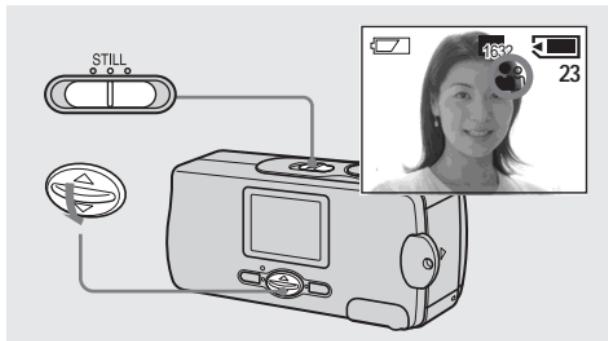


■ Vivid nature mode

The vivid nature mode enhances blues and greens such as the sky, ocean and mountains, letting you shoot natural landscapes with vivid, striking colors.

- The focus setting changes to $[\infty]$.
- The flash cannot be used in this mode.
- When setting the focus to [AUTO], the focus is adjusted to telephoto.





→ Set the mode switch to STILL, and press ▼ (SCENE) on the control button repeatedly to select a desired mode.

Each time you press ▼ (SCENE), the indicator changes as follows:

● (Soft snap mode) → ● (Illumination snap mode)
→ ● (Vivid nature mode) → No indicator (Auto)

- If the menu is currently displayed, press MENU first so that the menu disappears.
- To cancel Scene Selection, press ▼ (SCENE) repeatedly to set to No indicator (Auto).
- You cannot use the Scene Selection when shooting movies.

Setting the distance to the subject – Focus preset

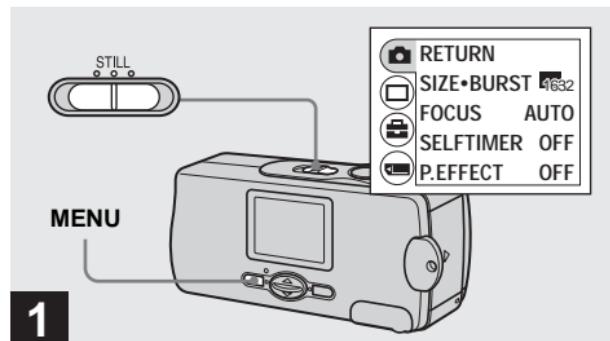
0.5 m



0.2 m



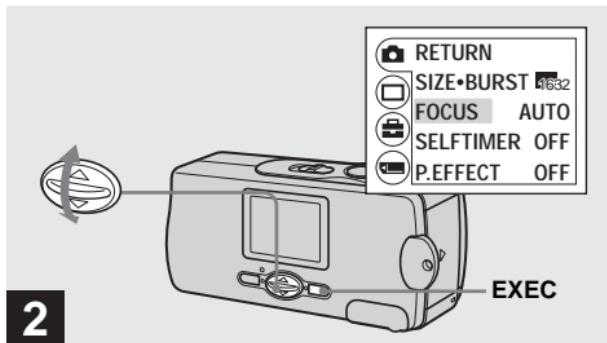
When shooting an image using a preset distance to the subject, or when shooting a subject through a net or window glass, it is difficult to achieve a proper focus using the auto focus function. The Focus preset function is useful in these cases.



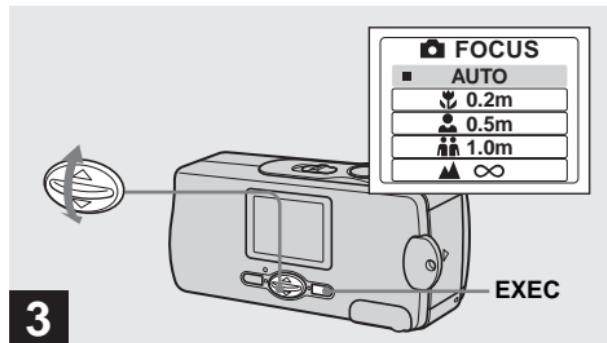
→ Set the mode switch to **STILL**, and press **MENU**.

The menu appears on the LCD screen.

- You can also carry out this operation when the mode switch is set to [MOVIE].



→ Select [] with **▲/▼** on the control button, then press EXEC.
Select [FOCUS] with **▲/▼** on the control button, then press EXEC.



→ Select the desired focus setting with **▲/▼** on the control button, then press EXEC.

You can select from the following distance settings:
AUTO (No indicator),  0.2 m,  0.5 m,  1.0 m, and  ∞ (infinity)

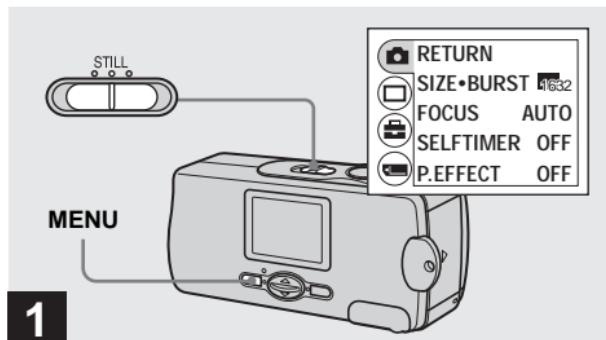
The indicator is displayed on the LCD screen.

To reactivate auto focusing

Select [AUTO] in step 3.

- Focus setting information is approximate, and should be used as a reference.

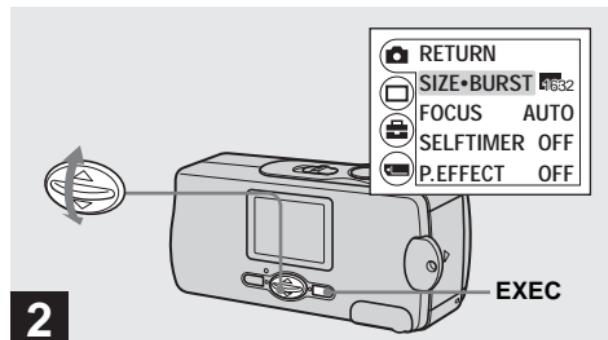
Shooting five images continuously – Burst



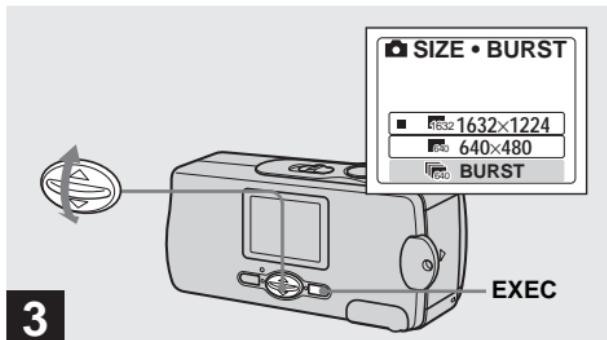
→ Set the mode switch to STILL, and press MENU.

The menu appears on the LCD screen.

- You cannot use the flash in this mode.
- You can shoot up to five images in succession by holding down the shutter button. If you release the shutter button before all five images are shot, the camera stops shooting as soon as you release the button.
- The recording interval is approximately 0.5 seconds. However, the recording interval may be longer in the Illumination snap mode.



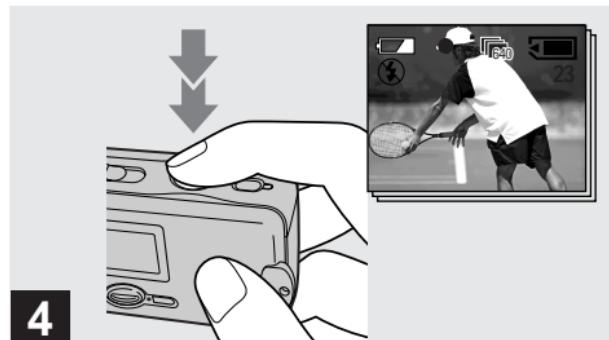
→ Select [SIZE•BURST] with ▲/▼ on the control button, then press EXEC.
Select [SIZE•BURST] with ▲/▼ on the control button, then press EXEC.



3

→ Select [BURST] with ▲/▼ on the control button, then press EXEC.

Press MENU so that the menu disappears from the LCD screen.



4

→ Press the shutter button halfway down, then hold the shutter button fully down.

Up to five images are recorded as long as you hold down the shutter button.

The images are recorded in 640×480 size.

- If you release the shutter button before the camera records five images, only the images that were shot while the shutter button was held down are recorded.

Adding special effects – Picture Effect

You can digitally process images to obtain special effects.

NEG. ART



The color and brightness of the picture are reversed as in a negative.

SEPIA



The picture is sepia-toned like an old photograph.

B&W

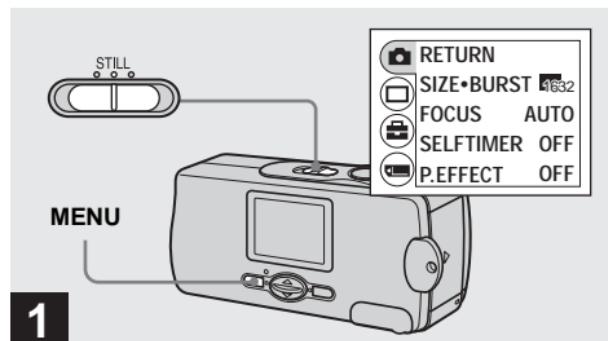


The picture is monochrome (black and white).

SOLARIZE



The light contrast is clearer and the picture looks like an illustration.

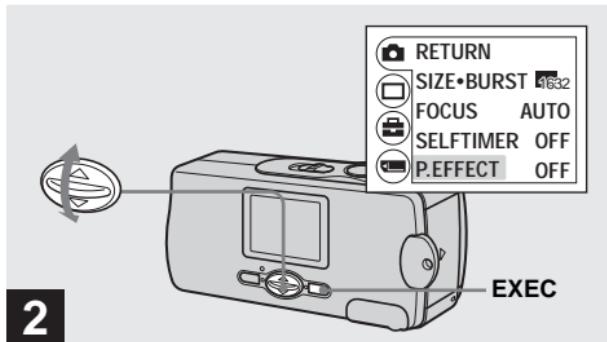


1

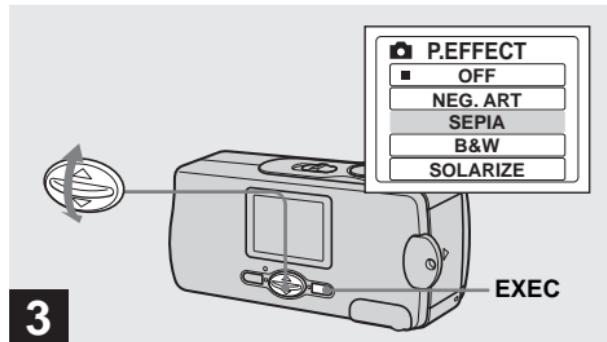
→ Set the mode switch to **STILL**, and press **MENU**.

The menu appears on the LCD screen.

- You can also carry out this operation when the mode switch is set to **MOVIE**.



→ Select [CAMERA] with **▲/▼** on the control button, then press EXEC.
Select [P.EFFECT] with **▲/▼** on the control button, then press EXEC.



→ Select the desired mode with **▲/▼** on the control button, then press EXEC.
To cancel Picture Effects
Select [OFF] in step 3.

Viewing still images on the LCD screen

Single (single-image) screen



Index (four-image) screen



You can view images shot with your camera almost immediately on the LCD screen. You can select the following two methods for viewing images.

Single (single-image) screen

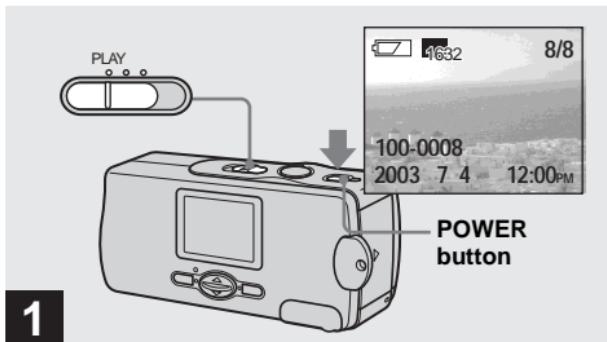
You can view one image at a time, displayed over the entire screen.

Index (four-image) screen

Four images are displayed simultaneously in separate panels on the screen.

- For a detailed description of the screen indicators, see page 101.
- For details on viewing movies, see page 51.
- Images other than 1632×1224, 1600×1200, 1280×960 or 640×480 size are displayed as thumbnail images.

Viewing single images



→ Set the mode switch to **PLAY**, and press the **POWER** button to turn on the power.

The last image you shot appears on the LCD screen.

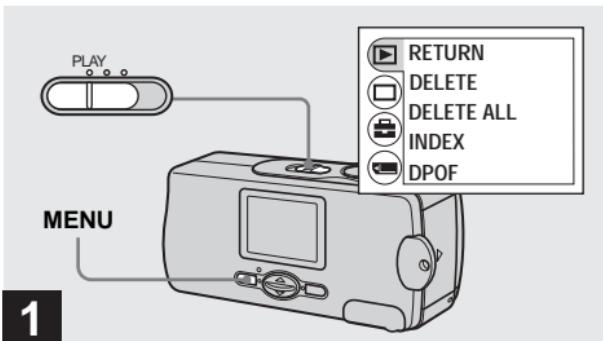
- If you close the lens cover while viewing images, the power is off.



→ Select the desired still image with **▲/▼** on the **control button**.

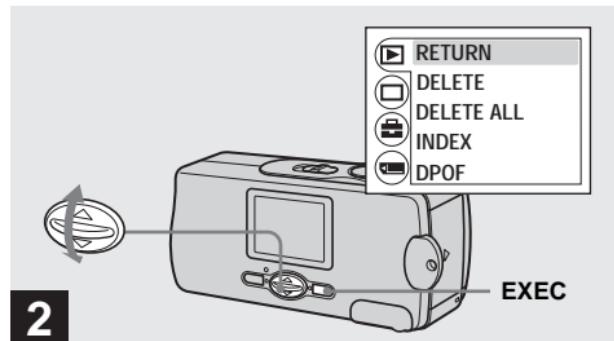
- ▲ : To display the preceding image
- ▼ : To display the next image

Viewing an index screen (four-image)

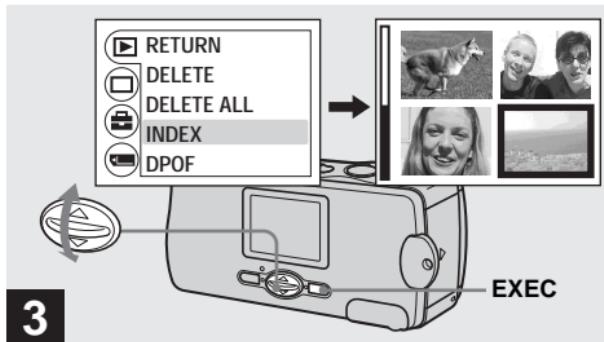


→ Set the mode switch to **PLAY**, and press **MENU**.

The menu appears on the LCD screen.



→ Select [**▶**] with **▲/▼** on the control button, then press **EXEC**.



→ Select [INDEX] with **▲/▼** on the control button, then press EXEC.

The display switches to the Index (four-image) screen.

To display the next (previous) index screen

Press **▲/▼** on the control button to move the yellow border.

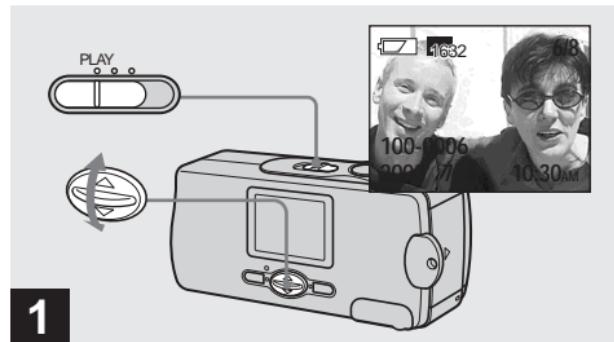
To return to the single-image screen

Select [SINGLE] in step 3. When four frames are displayed, press EXEC to display the single image shown with the yellow border.

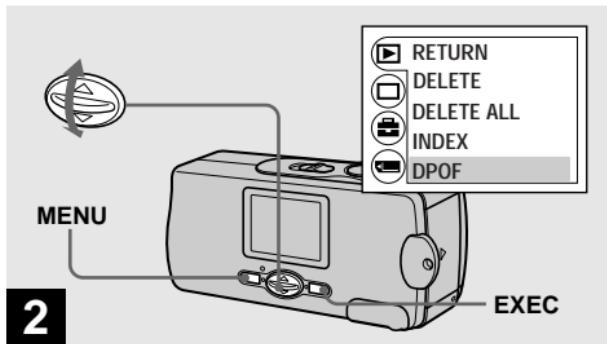
Choosing images to print – Print (DPOF) mark

You can mark a print (DPOF) mark on still images shot with your camera. This function is convenient when having images printed at a shop or by a printer that supports the DPOF (Digital Print Order Format) standard.

- You cannot mark movies.



→ Set the mode switch to **PLAY**, and display the image you want to print with **▲/▼** on the control button.

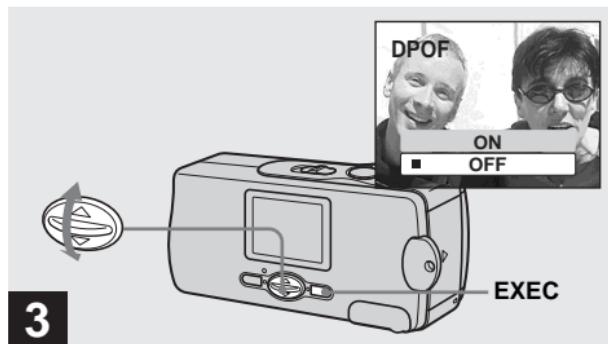


2

→ Press MENU, and select [▶] with ▲/▼ on the control button, then press EXEC.
Select [DPOF] with ▲/▼ on the control button, then press EXEC.

To mark the print (DPOF) mark in index-image mode

For details, see page 46 and switch to index screen.



3

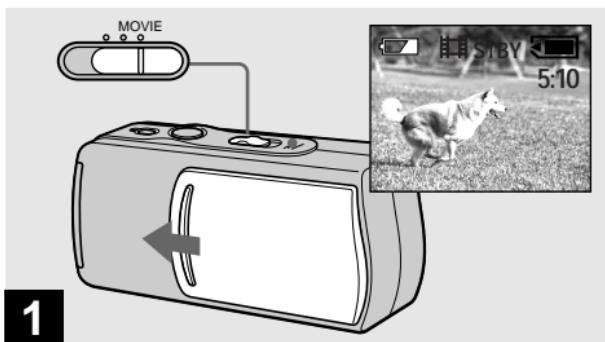
→ Select [ON] with ▲/▼ on the control button, then press EXEC.

When you press MENU, the menu disappears and the  mark is marked on the displayed image.

To unmark the print (DPOF) mark

Select [OFF] in step 3. The  mark disappears.

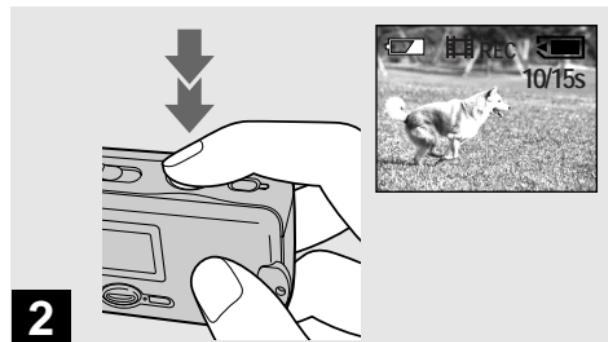
Shooting movies



1

→ Set the mode switch to **MOVIE**, and open the lens cover to turn on the power.

- Movies are recorded in MPEG format.
- Sound cannot be recorded in movies.

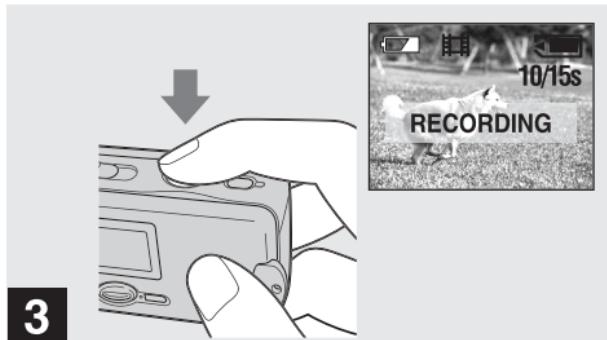


2

→ Press the shutter button fully down.

“REC” appears on the LCD screen and the camera starts recording the image. The maximum recording time is 15 seconds.

- The auto focus function can set the focus at any distance from approximately 1.0 m to ∞ (infinity). To shoot a subject at a closer distance than 1.0 m, select 0.2 m or 0.5 m with the Focus preset function (page 37).
- Recording stops when the “Memory Stick” is full.
- For details on the recording time for each image size, see page 51.
- The flash does not function when shooting movies.



3

→ **To stop recording, press the shutter button fully again.**

Indicators during shooting

Indicators on the LCD screen are not recorded. You can use [LCD LIGHT] under [] with MENU and ▲/▼ on the control button to turn the LCD light on and off (page 28). This is useful for extending the battery life. For detailed descriptions of the indicators, see page 100.

To set the distance to the subject

Set the mode switch to MOVIE and follow the procedure on page 37.

To use the self-timer

Set the mode switch to MOVIE and follow the procedure on page 29.

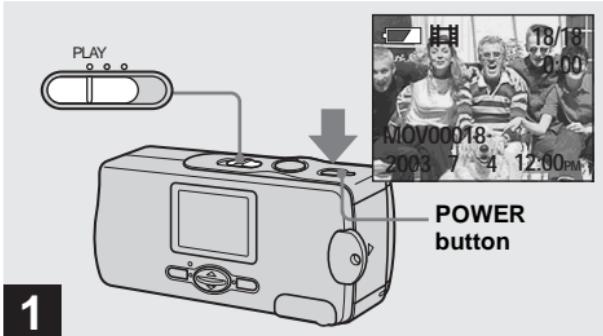
Shooting time

The shooting time is different, depending on the capacity of the “Memory Stick.” Refer to the following chart when you choose a “Memory Stick.”

- The maximum shooting time is 15 seconds per recording.
- The shooting time may vary, depending on the shooting conditions.
- For numbers of still images that can be recordable, see page 25.

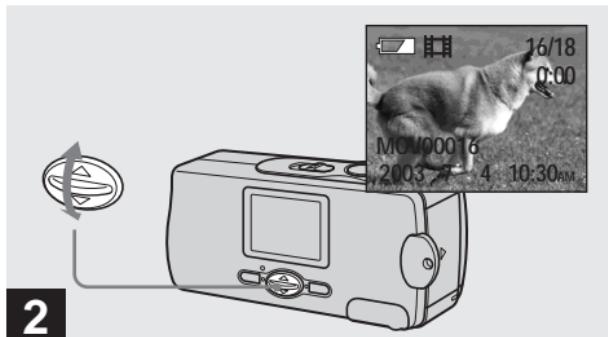
Capacity	Image size
8MB	160×112
16MB	5 min. 20 sec.
32MB	10 min. 40 sec.
64MB	21 min. 40 sec.
128MB	45 min.
	90 min.

Viewing movies on the LCD screen



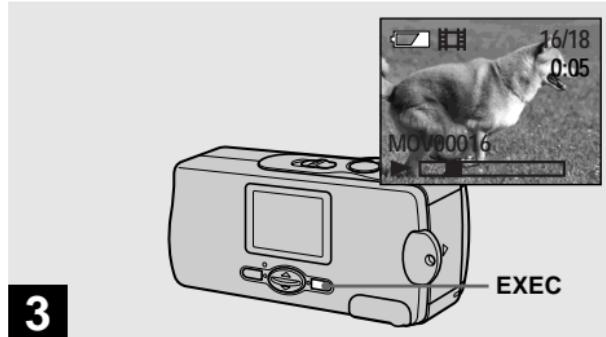
→ Set the mode switch to **PLAY**, and press the **POWER button** to turn on the power.

The last image you shot appears on the LCD screen.



→ Select the desired movies with ▲/▼ on the control button.

- ▲ : To display the preceding image
- ▼ : To display the next image



→ Press EXEC.

The movie is played back.

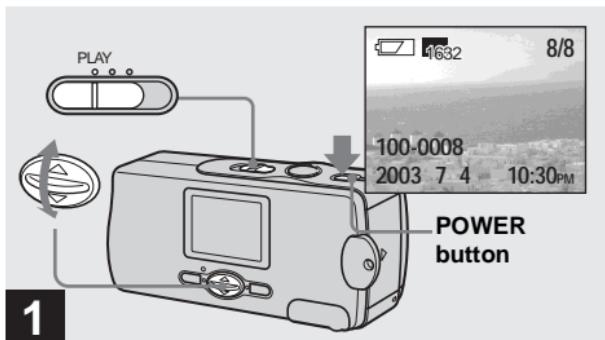
To stop playback

Press EXEC.

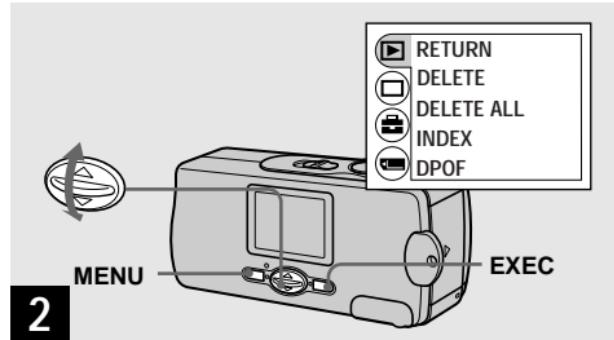
Indicators during viewing movies

Indicators on the LCD screen are not recorded. You can use [LCD LIGHT] under [] with MENU and ▲/▼ on the control button to turn the LCD light on and off (page 28). For detailed descriptions of the indicators, see page 101.

Deleting images

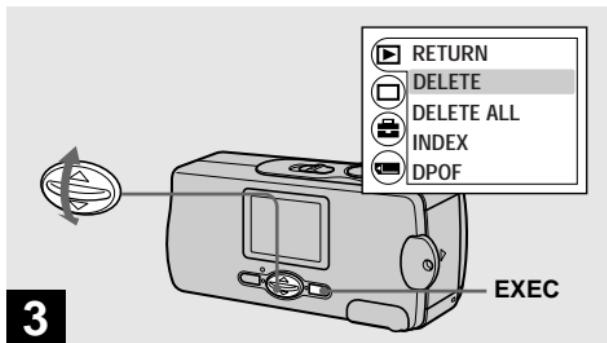


→ Set the mode switch to **PLAY**, and press the **POWER** button to turn on the power. Press **▲▼** on the control button to select the image you want to delete.



→ Press **MENU** and select [**▶**] with **▲▼** on the control button, then press **EXEC**.

To delete the image in index-image screen
For details, see page 46 and switch to index screen.

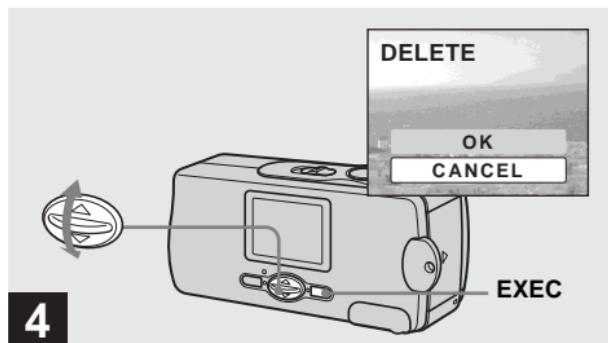


→ Select [DELETE] with **▲/▼** on the control button, then press EXEC.

The image has not yet been deleted at this point.

To delete all the images

Select [DELETE ALL] in step **3**.



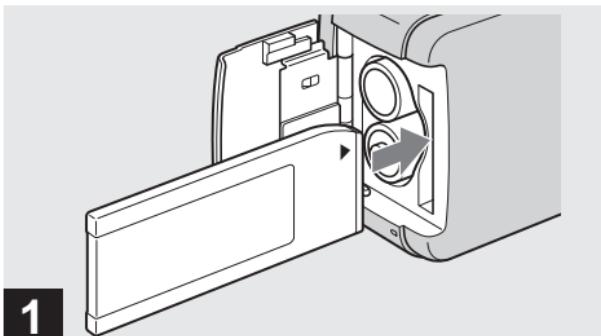
→ Select [OK] with **▲/▼** on the control button, then press EXEC.

“MEMORY STICK ACCESS” appears on the LCD screen. When this message disappears, the image has been deleted.

To cancel deleting

Select [CANCEL] in step **4**.

Formatting a “Memory Stick”

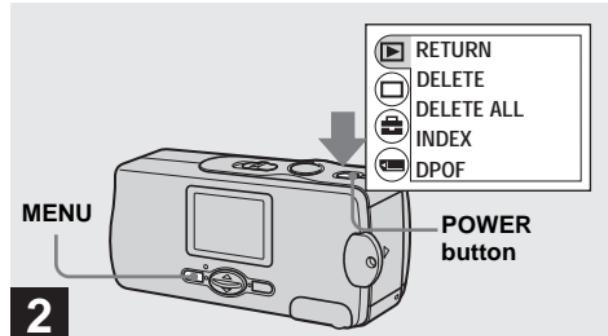


1

→ Insert the “Memory Stick” you want to format into the camera.

Do not open the battery/“Memory Stick” cover while formatting the “Memory Stick.” Doing so could damage the “Memory Stick.”

- When you format a “Memory Stick,” be sure to remain sufficient power, as “FORMAT ERROR” may occur.
- The term “formatting” means preparing a “Memory Stick” to record images; this process is also called “initialization.” The “Memory Stick” provided with this camera, and those available commercially, are already formatted, and can be used immediately. **When you format a “Memory Stick,” be aware that all of the images in the “Memory Stick” will be permanently deleted.**

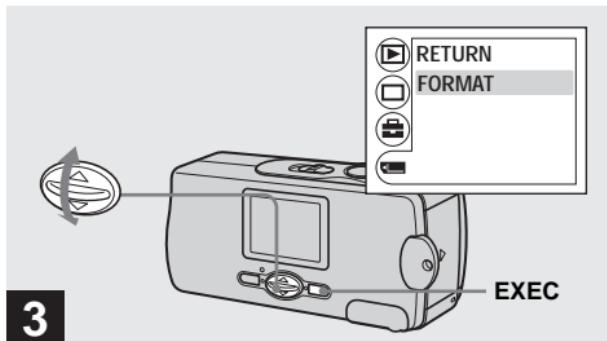


2

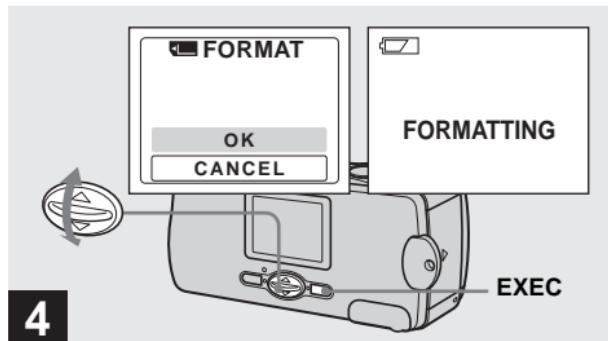
→ Press the POWER button to turn on the power, and press MENU.

The menu appears on the LCD screen.

- This operation is available no matter what position the mode switch is in.



→ Select [] with **▲/▼** on the control button, then press EXEC.
Select [FORMAT] with **▲/▼** on the control button, then press EXEC.



→ Select [OK] with **▲/▼** on the control button, then press EXEC.

The “FORMATTING” message appears. When this message disappears, the format is complete.

To cancel formatting
Select [CANCEL] in step **4**.

Copying images to your computer

Follow the steps below to copy the images you have shot to your computer.

Steps required by your OS (Operating System)

OS	Steps
Windows 98/98SE/2000/Me	Steps ① to ⑤ (pages 59 to 73, 76, 78)
Windows XP	Steps ⑤ of ① to ⑤ (pages 59, 60, 62 to 70, 74 to 76, 78)
Mac OS 8.5.1/8.6/9.0/9.1/9.2, Mac OS X (v10.0/v10.1)	Pages 79, 80

- Some step may be unnecessary depending on your OS.
- After the USB driver or applications are installed, step ① is unnecessary.

Recommended computer environment

Recommended Windows environment

OS: Microsoft Windows 98, Windows 98SE, Windows 2000 Professional, Windows Millennium Edition, Windows XP Home Edition, or Windows XP Professional

The above OS must be installed at the factory. Operation is not assured in an environment upgraded to the operating systems described above or in a multi-boot environment.

CPU: MMX Pentium 200 MHz or faster

USB connector: Provided as standard

Display: 800 × 600 dots or higher

High Color (16-bit color, 65 000 colors) or higher



Recommended Macintosh environment

OS: Mac OS 8.5.1, 8.6, 9.0, 9.1, 9.2, or Mac OS X (v10.0/v10.1)

The above OS must be installed at the factory. For the following models, update your OS to Mac OS 9.0 or 9.1.

- iMac with Mac OS 8.6 installed at the factory, and a slot loading type CD-ROM drive
- iBook or Power Mac G4 with the Mac OS 8.6 installed at the factory

USB connector: Provided as standard

Display: 800 × 600 dots or higher
32 000-color or higher

- If you connect two or more USB equipment to a single computer at the same time, some equipment, including your camera, may not operate depending on the type of USB equipment.
- Operations are not guaranteed when using a USB hub.
- Operations are not guaranteed for all the recommended computer environments mentioned above.

USB mode

There are two modes for a USB connection, [NORMAL] and [PTP]* modes. The factory setting is the [NORMAL] mode. This section describes the USB connection using the [NORMAL] mode.

When the camera is connected to your computer via a USB cable, the camera can draw its power from your computer (USB Bus Powered).

* Compatible with Windows XP and Mac OS X

Communication with your computer

When your computer resumes from the suspend or sleep mode, communication between your camera and your computer may not recover at the same time.

When a USB connector is not provided on your computer

When neither a USB connector nor a “Memory Stick” slot is provided, you can copy images using an additional device. See the Sony Website for details.

<http://www.sony.net/>

1 Installing the USB driver and application

98
98SE
2000
Me
XP

Contents of the CD-ROM

■ USB driver

This driver is needed in order to connect the camera to a PC.

■ Image Transfer (for Windows users only)

This application is used to easily transfer images shot with your camera to a computer.

■ ImageMixer

This application is used to display and edit images that are stored in a computer.



1

→ Start up your computer, and insert the supplied CD-ROM into the CD-ROM drive.

Do not connect your camera to your computer at this time.

The title screen appears. If it does not appear, double-click  (My Computer) → [ImageMixer] in that order.

- The display settings should be 800 × 600 dots or higher and High Color (16-bit color, 65 000 colors) or higher. When set to lower than 800 × 600 dots or 256 colors or less, the install title screen does not appear.

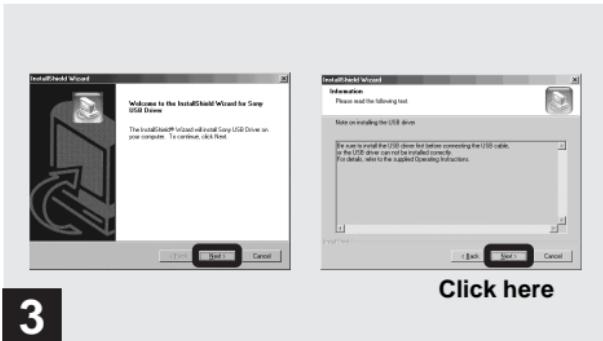
- This section describes how to establish a USB connection using Windows Me as an example. The required operations may differ depending on your OS.
- **Close down all applications running on the computer before installing the driver.**
- When using Windows XP or Windows 2000, log on as Administrators.



→ Click [USB Driver] on the title screen.

The “InstallShield Wizard” screen appears.

- When using Windows XP, you need not install the USB driver. Proceed to step **5**.



3

Click here

→ Click [Next]. When the “Information” screen appears, click [Next].

The USB driver installation starts. When the installation is completed, the screen informs you of completion.



4

Click here

→ Click [Yes, I want to restart my computer now], then click [Finish].

Your computer restarts. Then, you can establish USB connection.



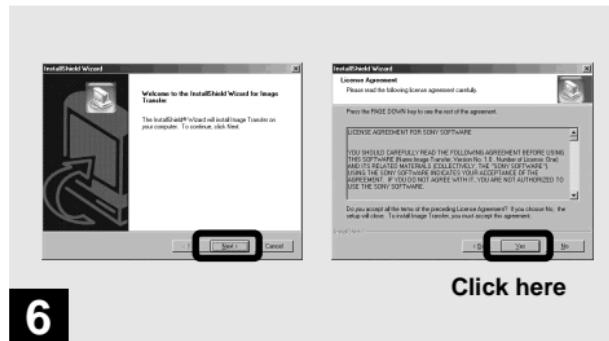
5

→ Click [Image Transfer] on the title screen.
 Select the desired language, then click [OK].

The “Welcome to the InstallShield Wizard” screen appears.

The USB driver is needed in order to use “Image Transfer.” If the necessary driver is not already installed on your computer, a screen that asks if you want to install the driver will appear. Follow the instructions that appear on the screen.

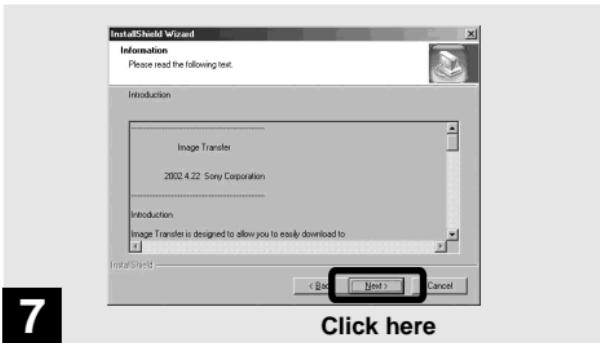
- This section describes the English screen.



6

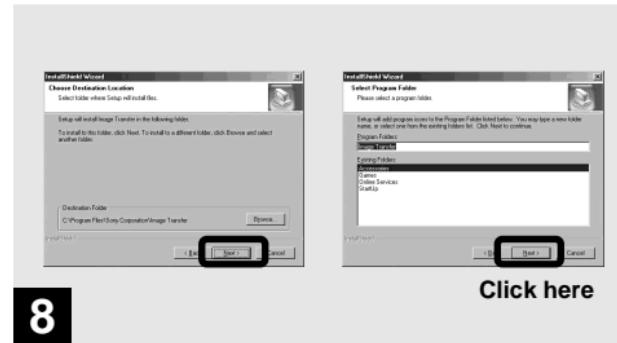
→ Click [Next]. When “License Agreement” screen appears, click [Yes].

Read the agreement carefully. If you accept the terms of the agreement, proceed with the installation. The “Information” screen appears.



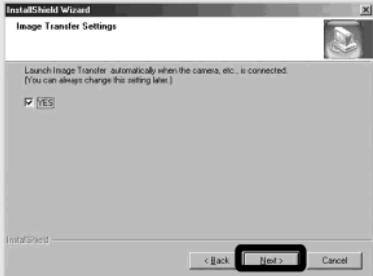
Click here

→ Click [Next].



8

→ Select the folder to be installed, then click [Next].
Select the program folder, then click [Next].



9

Click here

→ Confirm if the checkbox is checked on the “Image Transfer Settings” screen, then click [Next].

“Image Transfer” installation starts.

When the installation is completed, the screen informs you of completion.



10

Click here

→ Click [Finish].

The “InstallShield Wizard” screen closes.

If you wish to continue with the installation of “ImageMixer,” follow the procedure that begins on page 65.

**11**

→ Click [PIXELA ImageMixer] on the title screen.

The “Choose Setup Language” screen appears.

- You can use the “PIXELA ImageMixer for Sony” software to copy, view and edit images. For details, see the software’s help files.

**12**

→ Select the desired language, then click [OK].

The “Welcome to the InstallShield Wizard” screen appears.

- This section describes the English screen.

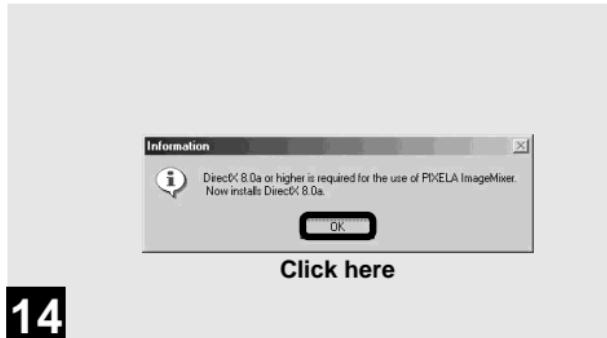


13

→ Follow instructions on each succeeding screen.

When installation is complete, the “Read Me” text appears. Read the text, then close the window by clicking  at the upper right corner of the screen. After that, click [Finish] in the install screen to close the install screen.

- If DirectX8.0a or a later version is not installed in your computer, the “Information” screen appears.

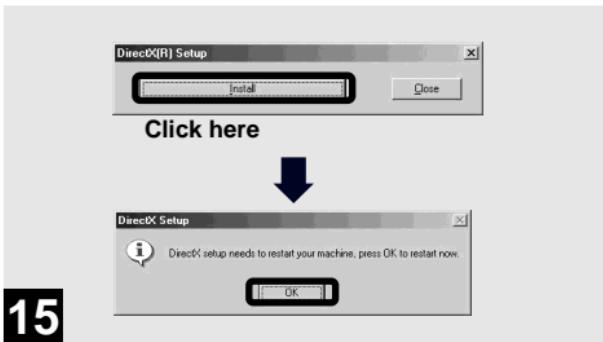


14

→ Click [OK].

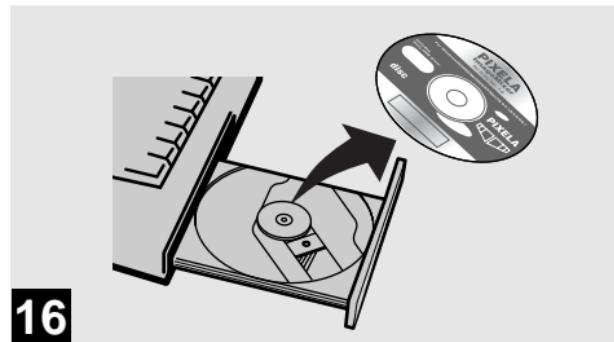
The “Microsoft DirectX8.0a Setup” screen appears.

- When using Windows XP, you need not install DirectX. Proceed to step **16**.
- You do not need to install DirectX again if DirectX Ver. 8.0a or later is already installed in your computer. Proceed to step **16**.



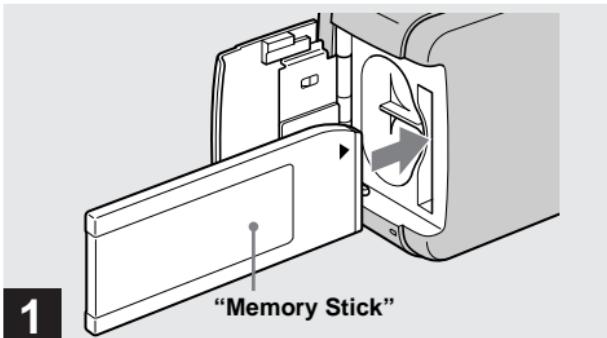
→ Click [Install] at the “DirectX(R) Setup” screen. When the “DirectX Setup” screen appears, click [OK].

DirectX installation starts. When installation is complete, your computer restarts.



→ Remove the CD-ROM.

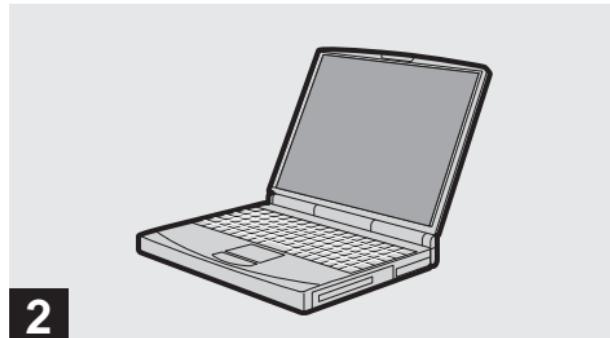
Then, you can establish the USB connection.



1

→ Insert the "Memory Stick" with the images you want to copy into the camera.

- For further details on the "Memory Stick", see page 22.
- When your camera is connected to a computer, it draws power from the computer side. Removing the Nickel Metal Hydride batteries before connecting the camera is recommended in order to prevent battery deterioration.

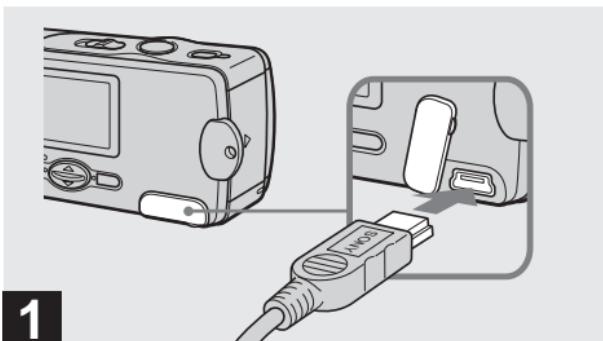


2

→ Turn on your computer.

3 Connecting your camera to your computer

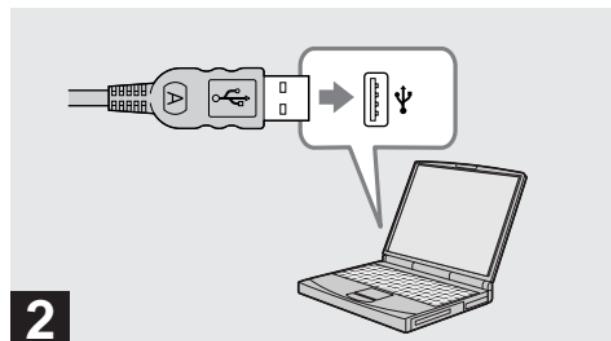
98
98SE
2000
Me
XP



1

→ Open the jack cover, and connect the supplied USB cable to your camera.

- Operations are not guaranteed when using a USB hub.



2

→ Connect the other end of the USB cable to your computer.

The camera is on.

- The camera can receive power supply from most of the computers that are recommended for use through the USB connection (USB Bus Powered), so in this case there is no need to insert batteries into the camera.
- When using a desktop computer, connect the USB cable to the USB connector on the rear panel.
- When using Windows XP, the copy wizard automatically appears on the desktop. Proceed to page 74.



USB MODE:NORMAL



3

“USB MODE: NORMAL” appears on the LCD screen. When a USB connection is established for the first time, your computer automatically runs the used program to recognize your camera. Wait for a while.

- If “USB MODE: NORMAL” is not shown in step 3, confirm that [USB] is set to [NORMAL] in [] (page 92).
- In USB mode, the POWER button, lens cover and other controls on the camera do not function.

Disconnecting the USB cable from your computer or removing the “Memory Stick” from your camera during USB connection

When the access lamp is lit up, it means that image data is being read or written. Never open the battery/“Memory Stick” cover at this time, as the data may be damaged.

For Windows 2000, Me, or XP users

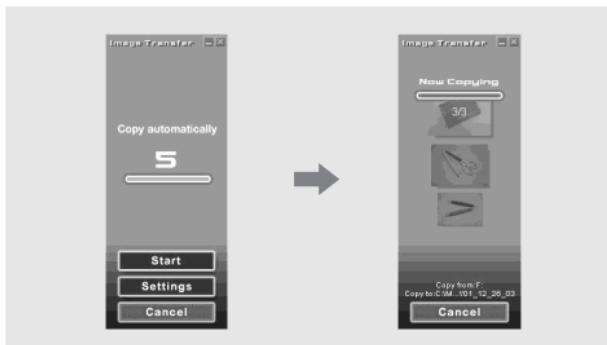
- 1 Double-click  on the tasktray at the lower right of the screen.
- 2 Click  (Sony DSC), then click [Stop].
- 3 Confirm the device on the confirmation screen, then click [OK].
- 4 Click [OK].
This step is unnecessary for Windows XP users.
- 5 Disconnect the USB cable or remove the “Memory Stick.”

For Windows 98 or 98SE users

Do only step 5 above.

④ Copying images

98 2000
98SE Me



- Normally “Image Transfer” and “Date” folders are created inside the “My Documents” folder, and all of the image files recorded with your camera are copied into these folders.
- You can change the “Image Transfer” settings on the “Image Transfer Settings” screen (page 76).
- When using Windows XP, see page 74.

If “Launch Image Transfer automatically” (page 64) is checked during “Image Transfer” installation, “Image Transfer” automatically launches during USB connection and the images are copied.

When copying is complete, “ImageMixer” automatically launches and a list of images appears.
If “Image Transfer” does not launch automatically, double-click the “Image Transfer” icon in the tasktray.

Copying images without using “Image Transfer”

If you do not set to launch “Image Transfer” automatically, you can copy images as following procedure.

1 Double-click [My Computer], then double-click [Removable Disk].

The contents of the “Memory Stick” inserted in your camera appear.

- This section describes an example of copying image files to the “My Documents” folder.
- When the “Removable Disk” icon is not shown, see page 73.
- When using Windows XP, see page 75.

2 Double-click [DCIM], then double-click [100MSDCF].

The “100MSDCF” folder opens.

- The folder names vary depending on the type of images they contain (page 77).

3 Drag and drop the image files into the “My Documents” folder.

The image files are copied to the “My Documents” folder.

- When the copy destination already contains an image with the same file name, the overwrite confirmation message appears. When you want to overwrite the existing image with the new one, click [Yes]. In this time, the original one is deleted. When you do not want to overwrite it, click [No], then change the file name.

When a removable disk icon is not shown

- 1 Right-click [My Computer], then click [Properties].
The “System Properties” screen appears.
 - When using Windows 2000, click [Hardware] on the “System Properties” screen.
- 2 Confirm if other devices are already installed.
 - ① Click [Device Manager].
 - ② Double-click [?] Other Devices].
 - ③ Confirm if there is a “ Sony DSC” or “ Sony Handycam” with a  mark.

- 3 If you find either of the devices above, follow the steps below to delete them.

- ① Click [ Sony DSC] or [ Sony Handycam].
- ② Click [Remove]. (When using Windows 2000, click [Uninstall].)

The “Confirm Device Removal” screen appears.

- ③ Click [OK].

The device is deleted.

Try the USB driver installation again using the supplied CD-ROM (page 59).

Copying images using “Image Transfer”

1 Connect the camera and your computer with a USB cable (page 69).

When the USB connection is made, “Image Transfer” and the OS AutoPlay Wizard both activate. To set the system so that the OS AutoPlay Wizard does not activate, continue and follow the procedure below to cancel the setting.

2 Click [Start], then click [My Computer].

3 Right-click [Sony MemoryStick], then click [Properties].

4 Cancel the setting.

- ① Click [AutoPlay].
- ② Set [Content type] to [Pictures].
- ③ Check [Select an action to perform] under [Actions], select [Take no action], then click [Apply].
- ④ Set [Content type] to [Video files] and [Mixed content] in step ②, and repeat step ③.
- ⑤ Click [OK].
The [Properties] screen closes.
 - The OS AutoPlay Wizard does not activate automatically the next time the USB connection is made.

Copying images using the Windows XP OS AutoPlay Wizard

1 Connect the camera and your computer with a USB cable (page 69).

2 Click [Copy pictures to a folder on my computer using Microsoft Scanner and Camera Wizard], then click [OK].

The “Scanner and Camera Wizard” screen appears.

3 Click [Next].

The images stored on the “Memory Stick” are displayed.

4 Click the checkbox of images that you do not want to copy to your computer and remove the checkmark, then click [Next].

The “Picture Name and Destination” screen appears.

5 Specify the image group names to be copied and the copy destination, then click [Next].

Image copying starts. When the copying is completed, the “Other Options” screen appears.

6 Select [Nothing. I'm finished working with these pictures], then click [Next].

The “Completing the Scanner and Camera Wizard” screen appears.

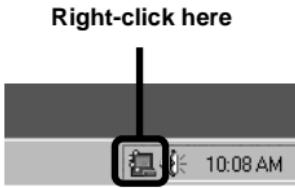
7 Click [Finish].

The wizard closes.

- To continue copying other images, follow the procedure on page 70 to disconnect the USB cable and reconnect it. Then, perform the procedure from step **1** again.

Changing “Image Transfer” settings

You can change “Image Transfer” settings. Right-click the “Image Transfer” icon on the task tray, select [Open Settings]. The settings you can set are as follows: [Basic], [Copy], and [Delete].



When the “Image Transfer” starts, the below window appears.

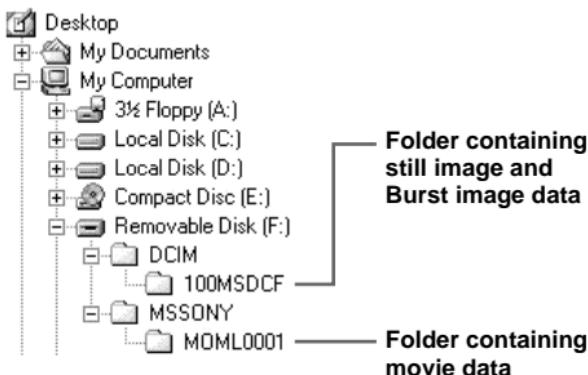


When you select [Settings] from the above window, you can only change the [Basic] setting.

Image file storage destinations and image file names

Image files recorded with your camera are grouped as folders in the “Memory Stick” by recording mode.

Example: For Windows Me users



Notes

The meanings of the file names in the following table are as follows:

□□□□ stands for any number within the range from 0001 to 9999.

Folder	File name	File meaning
100MSDCF	DSC0□□□□.JPG	<ul style="list-style-type: none">• Still image file recorded normally• Still image file recorded in Burst mode (page 39)
MOML0001	MOV0□□□□.MPG	<ul style="list-style-type: none">• Movie file recorded normally (page 49)

5 Viewing the images on your computer

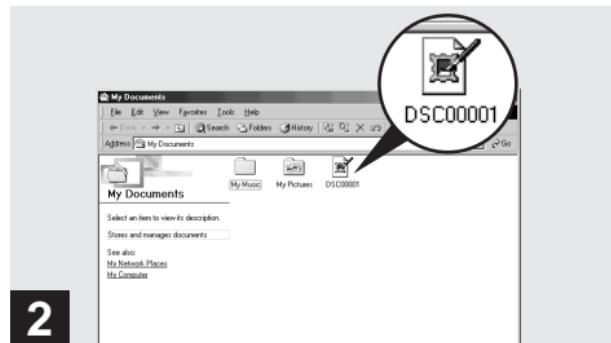
98 2000 XP
98SE Me



→ Double-click [My Documents] on the desktop.

The "My Documents" folder contents are displayed.

- This section describes the procedure for copying images to the "My Documents" folder.
- When using Windows XP, double-click [Start] → [My Documents] in that order.
- You can use the "PIXELA ImageMixer for Sony" software to view images on your computer. For details, see the software's help files.



→ Double-click the desired image file.

The image is displayed.

For Macintosh users

Follow the steps below, according to your OS.

OS	Steps
Mac OS 8.5.1/8.6/9.0	Steps ① to ⑤
Mac OS 9.1/9.2/Mac OS X (v10.0/v10.1)	Steps ①② to ⑤

① Installing the USB driver and “ImageMixer”

① Installing the USB driver (for Mac OS 8.5.1, 8.6 or 9.0 users only)

- 1 Turn on your computer, and set the supplied CD-ROM into the CD-ROM drive.
The “PIXELA ImageMixer for Sony” screen appears.
- 2 Double-click  (Setup Menu).
- 3 Click  (USB Driver).
The “USB Driver” screen appears.
- 4 Double-click the icon of the hard disk containing the OS to open the screen.
- 5 Drag and drop the following two files from the screen opened in step **3** into the System Folder icon in the screen opened in step **4**.
 - Sony USB Driver
 - Sony USB Shim

- 6 When the message for confirmation is shown, click “OK.”

② Installing “ImageMixer”

- 1 Select the desired language.
- 2 Follow the instructions on each succeeding screen.
- 3 Restart your computer and remove the CD-ROM from the CD-ROM drive.

② Preparing your camera

For details, see page 68.

③ Connecting your camera to your computer

For details, see page 69.

Disconnecting the USB cable from your computer or removing the “Memory Stick” from your camera during a USB connection

Drag and drop the “Memory Stick” or the drive icon to the “Trash” icon, then remove the USB cable or “Memory Stick.”

- If you are using Mac OS X, remove the USB cable, etc., after you have turned your computer off.



④ Copying images

- 1 Double-click the newly recognized icon on the desktop.

The contents of the “Memory Stick” inserted in your camera appear.

- 2 Double-click “DCIM.”

- Double-click “MSSONY” when copying the movie files.

- 3 Double-click “100MSDCF.”

- Double-click “MOML0001” when copying the movie files.

- 4 Drag and drop the image files to the hard disk icon.

The image files are copied to your hard disk.

⑤ Viewing the images on your computer

- 1 Double-click the hard disk icon.

- 2 Double-click the desired image file in the folder containing the copied files.

The image file opens.

- You can use the “PIXELA ImageMixer for Sony” software to copy images to your computer and to view images on your computer. For details, see the software’s help files.

Troubleshooting

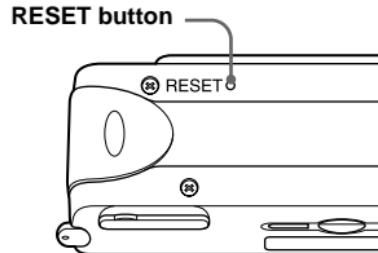
If you experience trouble with your camera, try the following solutions.

- 1 First check the items on the tables below. **If code displays “C:□□:□□” appear on the LCD screen, the self-diagnosis display function is working (page 89).**
- 2 Should your camera still not work properly, press the RESET button on the bottom of the camera using a fine-tipped object, then turn on the power again. (All the settings including date and time are cleared.)

Batteries and power

Symptom	Cause	Solution
The battery remaining indicator is incorrect, or sufficient battery remaining indicator is displayed but the power runs out soon.	<ul style="list-style-type: none">• You have used the camera for a long time in an extremely hot or an extremely cold location.• The batteries are discharged.• The battery contacts or the terminals on the battery/“Memory Stick” cover are dirty.• The Nickel Metal Hydride batteries are exhibiting the “memory effect” (page 13).• The batteries are dead (page 97).	<ul style="list-style-type: none">→ Install charged batteries (page 15).→ Wipe any dirt off from them with a dry cloth (page 13).→ To restore the batteries to their original condition, use them until they are fully drained before recharging them.→ Replace the batteries with a new one.

- 3 Should your camera still not work properly, consult your Sony dealer or local authorized Sony service facility.



Symptom	Cause	Solution
The battery life is short.	<ul style="list-style-type: none"> • You are shooting/viewing images in an extremely cold location. • The batteries are not charged enough. • The batteries are dead (page 97). 	<p>—</p> <ul style="list-style-type: none"> → Charge the batteries (page 12). → Replace the batteries with a new one.
You cannot turn on the camera.	<ul style="list-style-type: none"> • The batteries are not installed correctly. 	<ul style="list-style-type: none"> → Install the batteries correctly (page 15).
The power turns off suddenly.	<ul style="list-style-type: none"> • If you do not operate the camera for about three minutes when using batteries, the camera turns off automatically to prevent wearing down the battery (page 19). • The batteries are discharged. 	<ul style="list-style-type: none"> → Turn on the camera again (page 19). → Replace them with charged batteries (page 15).

Shooting images

Symptom	Cause	Solution
The subject does not appear on the LCD screen.	<ul style="list-style-type: none"> • The mode switch is set to PLAY. 	<ul style="list-style-type: none"> → Set the mode switch to STILL or MOVIE (pages 26 and 49).
The image is out of focus.	<ul style="list-style-type: none"> • The subject is too close. • The vivid nature mode is selected for the Scene Selection function. • The Focus preset function is selected. 	<ul style="list-style-type: none"> → Make sure to position the lens farther away from the subject than the shortest shooting distance (10 cm) when shooting (page 37). → Set it to other modes (page 35). → Set it to [AUTO] (page 38).
The image is too dark.	<ul style="list-style-type: none"> • The LCD screen is too dark. 	<ul style="list-style-type: none"> → Set [LCD LIGHT] to [ON] (page 28).
The image is too bright.	<ul style="list-style-type: none"> • The LCD screen is too bright. 	<ul style="list-style-type: none"> → Set [LCD LIGHT] to [OFF] (page 28).
The image is monochrome (black and white).	<ul style="list-style-type: none"> • [P. EFFECT] is set to [B&W] mode. 	<ul style="list-style-type: none"> → Cancel [B&W] mode (page 41).
Vertical streaks appear when you are shooting a very bright subject.	<ul style="list-style-type: none"> • The smear phenomenon is occurring. 	<ul style="list-style-type: none"> → This is not a malfunction.

Symptom	Cause	Solution
Your camera cannot record images.	<ul style="list-style-type: none"> • No “Memory Stick” is inserted. • The capacity of the “Memory Stick” is insufficient. • The write-protect switch on the “Memory Stick” is set to the LOCK position. • You cannot shoot while the flash is charging. • The mode switch is not set to STILL while shooting a still image. • The mode switch is not set to MOVIE when shooting a movie. 	<ul style="list-style-type: none"> → Insert a “Memory Stick” (page 22). → Delete the images saved in the “Memory Stick,” or format it. → Change the “Memory Stick.” → Set it to the recording position (page 95). → Wait until charging is complete before you begin shooting with the camera. → Set it to STILL (page 26). → Set it to MOVIE (page 49).
The flash does not work.	<ul style="list-style-type: none"> • The mode switch is set to PLAY or MOVIE. • The flash is set to  (no flash). • The vivid nature mode is selected for the Scene Selection function, or Burst mode in the image size. 	<ul style="list-style-type: none"> → Set it to STILL. → Set the flash to auto (no indicator),  (Red-eye reduction) or  (Forced flash) (page 32). → Set it to other modes (page 36).
The eyes of the subject come out red.	—	<ul style="list-style-type: none"> → Set the flash mode to  (Red-eye reduction) (page 32).
The date and time are recorded incorrectly.	<ul style="list-style-type: none"> • The date and time are not set correctly. 	<ul style="list-style-type: none"> → Set the correct date and time (page 20).

Viewing images

Symptom	Cause	Solution
Your camera cannot play back images.	<ul style="list-style-type: none">• The mode switch is not set to PLAY.• Your camera may not play back image files copied from the hard disk of your computer if the file name or file size has been changed or the image has been modified.	→ Set it to PLAY (page 44). —
The image cannot be played back on a computer.	—	→ See page 86.
You cannot display a print (DPOF) mark.	<ul style="list-style-type: none">• You cannot display print (DPOF) marks on moving images.	—

Deleting images

Symptom	Cause	Solution
Your camera cannot delete an image.	<ul style="list-style-type: none">• The write-protect switch on the “Memory Stick” is set to the LOCK position.	→ Set it to the recording position (page 95).
Even though you attempted to delete all of the files, the “Memory Stick” is still not empty.	<ul style="list-style-type: none">• The “Memory Stick” contains a file with a file name or storage destination that was changed through the computer.• Even the “DELETE ALL” function will not erase files that were write-protected by another device.	→ Format the “Memory Stick” (page 55). → Format the “Memory Stick” (page 55).
You have deleted an image by mistake.	<ul style="list-style-type: none">• Once you have deleted a file, you cannot restore it.	→ The write-protect switch on the “Memory Stick” will prevent you from deleting images by mistake (page 95).

Computers

Symptom	Cause	Solution
You do not know if the OS of your computer is compatible.	—	→ Check “Recommended computer environment” (page 57).
You cannot install the USB driver.	— <ul style="list-style-type: none">• You are attempting to install the USB driver on a machine that is not running a supported OS.	→ In Windows 2000, log on as Administrators (authorized Administrators) (page 60). —
Your computer does not recognize your camera.	<ul style="list-style-type: none">• You are not using the supplied USB cable.• The USB cable is not connected firmly.• [USB] is set to [PTP] in the [].• The USB connectors on your computer are connected to other equipment besides the keyboard, the mouse, and your camera.• The USB driver is not installed.• The camera was connected to a computer with the USB cable before installing the USB driver, so the device was not recognized by the computer.• No “Memory Stick” is inserted.	→ Use the supplied USB cable (page 69). → Disconnect the USB cable, and connect it again firmly. Make sure that “USB MODE” is displayed on the LCD screen (pages 69 and 92). → Set it to [NORMAL] (page 92). → Disconnect the USB cables except for the ones connected to the keyboard, the mouse, and your camera. → Install the USB driver (pages 59 and 79). → Delete the device which is not recognized, then install the USB driver (pages 59 and 73). → Insert a “Memory Stick.”
You cannot copy images.	<ul style="list-style-type: none">• The camera is not correctly connected to your computer.• You are not using the correct copy procedure for your OS. —	→ Connect the camera and your computer correctly using the USB cable (page 69). → Follow the designated copy procedure for your OS (pages 57, 71, 74 and 80). → If you are using the “PIXELA ImageMixer for Sony” application software, click on HELP.



Symptom	Cause	Solution
You cannot turn on the camera during USB connection.	<ul style="list-style-type: none"> The camera and your computer are connected through a hub. 	→ Connect the camera directly to your computer.
The image cannot be played back on a computer.	<ul style="list-style-type: none"> — — 	→ If you are using the “PIXELA ImageMixer for Sony” application software, click on HELP. → Consult the computer or software manufacturer.
The image is interrupted by noise when you view a movie on a computer.	<ul style="list-style-type: none"> You are playing back the file directly from the “Memory Stick.” 	→ Copy the file to the hard disk of your computer and then play back the file from the hard disk.
You cannot print an image.	<ul style="list-style-type: none"> — 	→ Check the printer settings. → Click on the HELP files for the “PIXELA ImageMixer for Sony” application software.
An error message appears when you set the supplied CD-ROM in your computer.	<ul style="list-style-type: none"> The computer display is not set correctly. 	→ Set the computer display as follows: Windows: 800 × 600 dots or higher High Color (16-bit color, 65 000 colors) or higher Macintosh: 800 × 600 dots or higher 32 000-color or higher

“Memory Stick”

Symptom	Cause	Solution
You cannot insert a “Memory Stick.”	<ul style="list-style-type: none"> You are inserting it backwards. 	→ Insert it from the right side (page 22).
You cannot record on a “Memory Stick.”	<ul style="list-style-type: none"> The write-protect switch on the “Memory Stick” is set to the LOCK position. The “Memory Stick” is full. 	→ Set it to the recording position (page 95). → Delete unnecessary images (page 53).
You cannot format a “Memory Stick.”	<ul style="list-style-type: none"> The write-protect switch on the “Memory Stick” is set to the LOCK position. 	→ Set it to the recording position (page 95).

Symptom	Cause	Solution
You have formatted a “Memory Stick” by mistake.	<ul style="list-style-type: none"> • All the images on the “Memory Stick” are deleted by formatting and cannot be restored. 	—

Other

Symptom	Cause	Solution
Your camera does not work.	<ul style="list-style-type: none"> • The battery level is low. (The  indicator appears.) • The USB cable is connected. • The built-in microcomputer is not working properly. 	<ul style="list-style-type: none"> → Charge the batteries (page 12). → Disconnect the USB cable, or operate on your computer. → Turn the power off and then on after one minute, and check that the camera works properly.
The power is on, but the camera does not work.	<ul style="list-style-type: none"> • The built-in microcomputer is not working properly. 	<ul style="list-style-type: none"> → Remove the batteries, then install them again after about one minute and turn on the camera. If the functions still do not work, press the RESET button located on the bottom of the camera using a fine-tipped object, then turn the power on again (page 81). (If you press the RESET button, all settings including the date and time are cleared.)
You cannot identify an indicator on the LCD screen.	—	<ul style="list-style-type: none"> → Check the indicator (pages 99 to 101).
The lens gets fogged.	<ul style="list-style-type: none"> • Moisture condensation has occurred. 	<ul style="list-style-type: none"> → Turn off the camera and leave for about an hour at the room temperature for the moisture to evaporate before use (page 94).

Warnings and messages

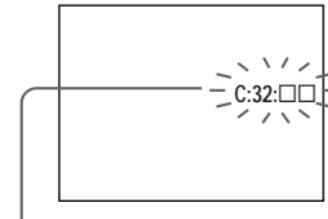
The following messages appear on the LCD screen.

Message	Meaning/Corrective Action
NO MEMORY STICK	<ul style="list-style-type: none">• Insert a “Memory Stick” (page 22).
SYSTEM ERROR	<ul style="list-style-type: none">• Turn the power off and on again (page 19).
MEMORY STICK ERROR	<ul style="list-style-type: none">• The inserted “Memory Stick” cannot be used in your camera (page 95).• The “Memory Stick” is damaged, or the terminal section of the “Memory Stick” is dirty.• Insert the “Memory Stick” correctly (page 22).
FORMAT ERROR	<ul style="list-style-type: none">• The “Memory Stick” format failed. Format the “Memory Stick” again (page 55).
MEMORY STICK LOCKED	<ul style="list-style-type: none">• The write-protect switch on the “Memory Stick” is set to the LOCK position. Set it to the recording position (page 95).
NO MEMORY SPACE	<ul style="list-style-type: none">• The capacity of the “Memory Stick” is insufficient. You cannot record images. Delete unnecessary images (page 53).
NO FILE	<ul style="list-style-type: none">• No images have been recorded on the “Memory Stick.”
FILE ERROR	<ul style="list-style-type: none">• An error occurred while playing back the image.
FOLDER ERROR	<ul style="list-style-type: none">• A folder with the same name already exists on the “Memory Stick.”
INVALID OPERATION	<ul style="list-style-type: none">• You are playing back a file that was created on equipment other than this camera.• You are attempting to assign the print (DPOF) mark to a file that contains a movie or that was created by another device.
	<ul style="list-style-type: none">• The battery level is low or zero. Charge the batteries (page 12). Depending on the conditions of use or the type of batteries, the indicator may flash even though there are still 5 to 10 minutes of remaining battery time left.
LENS COVER CLOSED	<ul style="list-style-type: none">• The lens cover is closed when the mode switch is set to STILL or MOVIE.
SHOOTING ERROR	<ul style="list-style-type: none">• Change the image size and try the shooting again.

Self-diagnosis display

– If a code starting with an alphabet letter appears

Your camera has a self-diagnosis display. This function displays the camera condition on the LCD screen with a combination of a letter and four numerical digits. If this occurs, check the following code chart and attempt the corresponding corrective actions. The last two digits (indicated by □□) will differ depending on the state of the camera.



Self-diagnosis display

Code	Cause	Corrective action
C:32:□□	There is trouble with your camera's hardware.	<ul style="list-style-type: none">• Turn the power off and on again (page 19).
C:13:□□	The camera cannot read or write data in the "Memory Stick."	<ul style="list-style-type: none">• Re-insert the "Memory Stick" several times.
	An unformatted "Memory Stick" is inserted.	<ul style="list-style-type: none">• Format the "Memory Stick" (page 55).
	The inserted "Memory Stick" cannot be used with your camera, or the data is damaged.	<ul style="list-style-type: none">• Insert a new "Memory Stick" (page 22).
E:61:□□ E:91:□□	A camera malfunction that you cannot reverse has occurred.	<ul style="list-style-type: none">• Press the RESET button (page 81) located on the bottom of the camera, then turn the power on again.

If you are unable to solve the problem even after trying the corrective actions a few times, repairs may be necessary. Contact your Sony dealer or local authorized

Sony service facility and inform them of the 5-digit code. (Example: E:61:10)

Menu items

Menu items that can be modified differ depending on the position of the mode switch.

The LCD screen shows only the items you can operate at the moment. Factory settings are indicated with ■.

When the mode switch is set to STILL (when [CAMERA] is selected)

Item	Setting	Description
SIZE·BURST	■1632×1224 / 640×480 / BURST	Selects the image size when shooting still images (pages 23 and 39).
FOCUS	■AUTO / 0.2 m / 0.5 m / 1.0 m / ∞	Selects the auto focus method or sets the focus preset (page 37).
SELFTIMER	ON / ■OFF	Sets the self-timer (page 29).
P.EFFECT	■OFF / NEG. ART / SEPIA / B&W / SOLARIZE	Sets the image special effects (page 41).

When the mode switch is set to MOVIE (when [MOVIE] is selected)

Item	Setting	Description
FOCUS	■AUTO / 0.2 m / 0.5 m / 1.0 m / ∞	Selects the auto focus method or sets the focus preset (page 37).
SELFTIMER	ON / ■OFF	Sets the self-timer (page 29).
P.EFFECT	■OFF / NEG. ART / SEPIA / B&W / SOLARIZE	Sets the image special effects (page 41).

When the mode switch is set to PLAY (when [▶] is selected)

Item	Setting	Description
DELETE	OK CANCEL	<ul style="list-style-type: none">Deletes the displayed image (page 53).Cancels deleting of the image.
DELETE ALL	OK CANCEL	<ul style="list-style-type: none">Deletes all images (page 53).Cancels deleting of the image.
INDEX / SINGLE	—	Switches between four-image display and single image display (page 43).
DPOF	ON / OFF	Marks/unmarks the print (DPOF) mark on still images you want to print (page 47).

* The following menus are available no matter what position the mode switch is in.

When [□] is selected

Item	Setting	Description
LCD LIGHT	■ON / OFF	Selects the brightness of the LCD light. Selecting [ON] makes the screen bright and easy to see when using the camera in dark locations, but also uses up the battery charge faster (page 28).
DISPLAY	■ON OFF	<ul style="list-style-type: none">Displays all indicators.Displays only warning messages.



When [] is selected

Item	Setting	Description
CLOCK SET	DATE NOTATION	<ul style="list-style-type: none">Set the date notation (page 20). ■[Y/M/D] / [M/D/Y] / [D/M/Y]Sets the date and time (page 20).
	DATE&TIME SET	
BEEP	■ON	<ul style="list-style-type: none">Turns on the beep/shutter sound when you press the control button/shutter button.
	SHUTTER	<ul style="list-style-type: none">Turns on the shutter sound. (The shutter sound is heard when you press the shutter button.)
	OFF	<ul style="list-style-type: none">Turns off the beep/shutter sound.
USB	■NORMAL / PTP	Switches the USB mode (page 58).
ALANG	—	Displays the menu items, warnings and messages in selected language.

When [] is selected

Item	Setting	Description
FORMAT	OK / CANCEL	Formats the “Memory Stick.” Note that formatting erases all the information recorded on the “Memory Stick” (page 55).

On cleaning

Cleaning the LCD screen

Wipe the screen surface with an LCD cleaning kit (not supplied) to remove fingerprints, dust, etc.

Cleaning the lens

Wipe the lens with a soft cloth to remove fingerprints, dust, etc.

Cleaning the camera surface

Clean the camera surface with a soft cloth slightly moistened with water, then wipe the surface dry. Do not use any type of solvent such as thinner, alcohol or benzine as this may damage the finish or the casing.

After using your camera at the seashore or other dusty locations

Clean your camera carefully. Otherwise, the salty air may corrode the metal fittings or dust may enter the inside of your camera, causing a malfunction.

Note on operating temperature

Your camera is designed for use between the temperatures of 0°C and 40°C (32°F and 104°F). Shooting in extremely cold or hot places that exceed this range is not recommended.



On moisture condensation

If the camera is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense inside or outside the camera. Should this occur, the camera will not operate properly.

Moisture condensation occurs easily when:

- The camera is brought from a cold location such as a ski slope into a warmly heated room.
- The camera is taken from an air-conditioned room or car interior to the hot outdoors, etc.

How to prevent moisture condensation

When bringing the camera from a cold place to a warm place, seal the camera in a plastic bag and allow it to adapt to conditions at the new location over a period of time (about an hour).

If moisture condensation occurs

Turn off the camera and wait about an hour for the moisture to evaporate. Note that if you attempt to shoot with moisture remaining inside the lens, you will be unable to record clear images.

On internal rechargeable button battery

This camera has an internal rechargeable button battery for maintaining the date and time and other settings regardless of whether the power is on or off.

This rechargeable button battery is continually charged as long as you are using the camera. However, if you use the camera for only short periods it discharges gradually, and if you do not use the camera at all for about one month it becomes completely discharged. In this case, be sure to charge this rechargeable button battery before using the camera.

However, even if this rechargeable button battery is not charged, you can still use the camera as long as you do not record the date and time.

Charging method of rechargeable button battery

Install charged size AAA Nickel Metal Hydride batteries, and leave the camera for 24 hours or more with the power off.

On "Memory Stick"

"Memory Stick" is a new compact, portable and versatile IC recording medium with a data capacity that exceeds the capacity of a floppy disk.

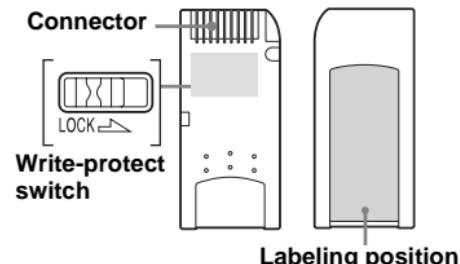
In addition to exchanging data between "Memory Stick" compatible equipment, you can also use a "Memory Stick" to store data as a type of detachable external recording media.

There are two types of "Memory Stick": an ordinary "Memory Stick" and a "MagicGate Memory Stick" that are equipped with the MagicGate* copyright protection technology. You can use both types of "Memory Stick" with your camera. However, because your camera does not support the MagicGate standards, data recorded with your camera is not subject to MagicGate copyright protection.

* MagicGate is copyright protection technology that uses encryption technology.

Notes on using the supplied "Memory Stick"

- You cannot record or delete images when the write-protect switch is set to LOCK. The position or the shape of the write-protect switch may differ depending on the "Memory Stick" you use.



- Do not remove the "Memory Stick" while reading or writing data.
- Data may be damaged in a location subject to the effects of static electricity or noise.
- We recommend backing up important data on the hard disk of your computer.
- Do not attach any other material than the supplied label on the labeling position.

On Nickel Metal Hydride batteries

Effective use of the battery

- When you carry or store the “Memory Stick,” put it in the case supplied with it.
- Do not touch the connector of a “Memory Stick” with your hand or a metal object.
- Do not strike, bend or drop a “Memory Stick.”
- Do not disassemble or modify a “Memory Stick.”
- Do not expose the “Memory Stick” to water.
- Do not use or keep the “Memory Stick” under the following conditions:
 - High temperature locations such as the hot interior of a car parked in direct sunlight
 - Locations exposed to direct sunlight
 - Humid locations or locations with corrosive substances

Notes on using “Memory Stick Duo” (not supplied)

- When using a “Memory Stick Duo” with your camera, be sure to insert the “Memory Stick Duo” into a “Memory Stick Duo” adaptor.
- Check to make sure the “Memory Stick Duo” is inserted facing the proper direction. Inserting the “Memory Stick Duo” facing the wrong direction may damage the equipment.
- Do not insert a “Memory Stick Duo” without a “Memory Stick Duo” adaptor into “Memory Stick” compatible equipment, as this may cause equipment trouble.

Battery life

- The battery life is limited. Battery capacity decreases little by little as you use it more and more, and as time passes. When the battery operating time seems to have been considerably shortened, a probable cause is that the batteries have reached the end of its life.
- The battery life varies depending on storage, operating conditions, and environment, and is different for each battery.

System

Image device 6.65 mm (1/2.7 type) color CCD
Primary color filter

Total pixels number of camera

Approx. 2 110 000 pixels

Effective pixels number of camera

Approx. 2 020 000 pixels

Lens

Single focal lens

$f = 5.0 \text{ mm (7/32 inches) (35 mm camera conversion: 33 mm (1 5/16 inches))}$
F2.8

Exposure control

Automatic, Scene selection (three modes)

Data formats Still images: DCF compliant

(Exif Ver. 2.2 JPEG compliant),
DPOF compatible

Movies: MPEG1 compliant (without audio)

Recording media

“Memory Stick”

Flash

Recommended distance: 0.5 m to 1.8 m (1.6 to 6.0 ft)



Connector

USB jack mini-B

LCD screen

LCD panel used

2.5 cm (1.0 type) TFT drive

Total number of dots

64 460 (293×220) dots

Power, general

Used batteries

AAA Nickel Metal Hydride batteries (2) 2.4 V
5 V (from USB cable)

Power consumption (when shooting)

1.45 W

Operating temperature range

0°C to +40°C (32°F to +104°F)

Storage temperature range

–20°C to +60°C (–4°F to +140°F)

Dimensions

85 × 29 × 40 mm
(3 3/8 × 1 3/16 × 1 5/8 inches)
(W/H/D, protruding portions not included)

Mass

Approx. 118 g (4.2 oz) (AAA Nickel Metal Hydride batteries, "Memory Stick," and neck strap included)

BC-CS1 Ni-MH battery charger

Power requirements

AC 100 to 240V 50/60Hz
2.2 W

Output voltage

Size AA: DC 1.8V, 165 mA × 2

Size AAA: DC 1.8V, 70 mA × 2

Dimensions 70 × 29 × 74 mm (2 7/8 × 1 3/16 × 3 inches)
(W/H/D)

Mass Approx. 70g (2.5 oz.)

Operating temperature range

0°C to 40°C (32°F to 104°F)

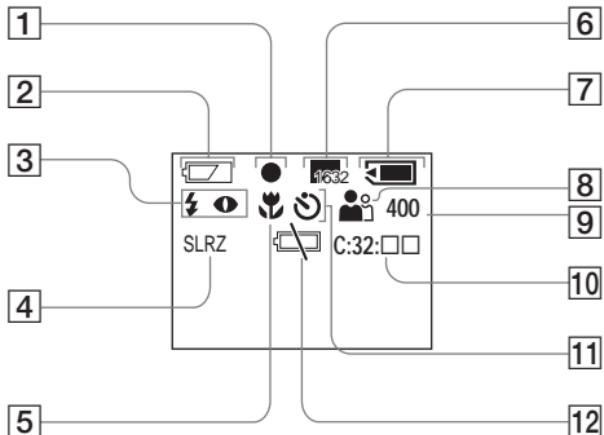
Accessories

- Size AAA Ni-MH batteries (2)
- Ni-MH battery charger (1)
- Power cord (mains lead) (1)
- USB cable (1)
- Neck strap (1)
- "Memory Stick" (8MB) (1)
- CD-ROM (SPVD-008) (1)
- Operating instructions (1)

Design and specifications are subject to change without notice.

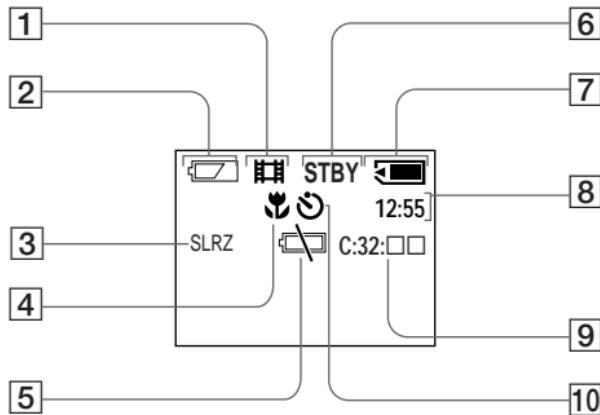
LCD screen displays

When shooting still images



- 1 AE/AF indicator (27)**
- 2 Battery remaining indicator (15)**
- 3 Flash mode indicator (32)**
- Red-eye reduction indicator (32)**
- 4 Picture effect indicator (41)**
- 5 Focus preset indicator (37)**
- 6 Image size indicator (23, 39)**
- 7 Remaining "Memory Stick" capacity indicator**
- 8 Scene selection indicator (34)**
- 9 Remaining number of recordable images indicator**
- 10 Self-diagnosis function indicator (89)**
- 11 Self-timer indicator (29)**
- 12 Low battery warning indicator (15)**

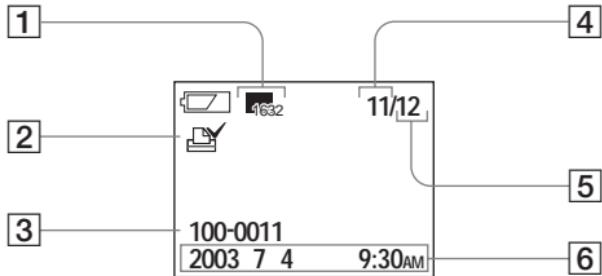
When shooting movies



- 1** Recording mode indicator (49)
- 2** Battery remaining indicator (15)
- 3** Picture effect indicator (41)
- 4** Focus preset indicator (37)
- 5** Low battery warning indicator (15)
- 6** Status indicator (49)
- 7** Remaining "Memory Stick" capacity indicator
- 8** Recording time [maximum recordable time] indicator (51)
- 9** Self-diagnosis function indicator (89)
- 10** Self-timer indicator (29)

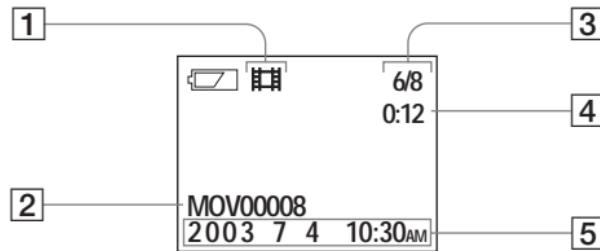
Page numbers in parentheses indicate the location of additional important information.

When playing back still images



- 1 Image size indicator (23, 39)
- 2 Print (DPOF) mark indicator (47)
- 3 File name (77)
- 4 Image number
- 5 Number of images recorded in "Memory Stick"
- 6 Recording date of the playback image

When playing back moving images



- 1 Recording mode indicator (51)
- 2 File name (77)
- 3 Image number/Number of images recorded in "Memory Stick"
- 4 Counter
- 5 Recording date of the playback image

Page numbers in parentheses indicate the location of additional important information.

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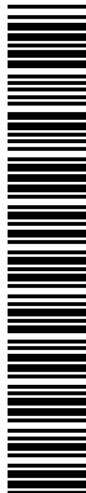
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asked questions can be found at our Customer Support Website.

SERVICE MANUAL

LEVEL 2

Ver 1.0 2002. 10

Revision History



Photo: SILVER model

US Model
Canadian Model
AEP Model
UK Model
E Model
Hong Kong Model
Australian Model
Chinese Model
Korea model
Tourist Model
Japanese Model

Link

• SPECIFICATIONS	• BLOCK DIAGRAMS	• PRINTED WIRING BOARDS
• SERVICE NOTE	• FRAME SCHEMATIC DIAGRAMS	• REPAIR PARTS LIST
• DISASSEMBLY	• SCHEMATIC DIAGRAMS	

- For ADJUSTMENTS (SECTION 6), refer to SERVICE MANUAL, ADJ (987621251.pdf).
- For INSTRUCTION MANUAL, refer to SERVICE MANUAL, LEVEL 1 (987621241.pdf).
- Reference No. search on printed wiring boards is available.

On the DD-182, PD-174 and TY-15 boards

This service manual provides the information that is premised the circuit board replacement service and not intended repair inside the DD-182, PD-174 and TY-15 boards.

Therefore, schematic diagram, printed wiring board, waveforms, mounted parts location and electrical parts list of the DD-182, PD-174 and TY-15 boards are not shown.

The following pages are not shown.

Schematic diagram	Pages 4-11 to 4-24	Mounted parts location	Pages 4-61 and 4-62
Printed wiring board	Pages 4-39 to 4-44	Electrical parts list	Pages 5-7, 5-8, 5-10, 5-12 to 5-14
Waveforms	Pages 4-58 and 4-59		

DIGITAL STILL CAMERA

SONY®



Cyber-shot U



SPECIFICATIONS

System

Image device 6.72 mm (1/2.7 type) color CCD
Primary color filter

Total pixels number of camera

Approx. 2 110 000 pixels

Effective pixels number of camera

Approx. 2 020 000 pixels

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Single focal lens
 $f = 5.0$ mm (7/32 inches) (35 mm camera conversion: 33 mm (1 5/16 inches))
F2.8

Exposure control

Automatic, Scene selection (three modes)

Data formats Still images: DCF compliant
(Exif Ver. 2.2 JPEG compliant),
DPOF compatible
Movies: MPEG1 compliant (without audio)

Recording media

“Memory Stick”

Flash Recommended distance: 0.5 m to 1.8 m (1.6 to 6.0 ft)

Connector

USB jack mini-B

LCD screen

LCD panel used

2.5 cm (1.0 type) TFT drive

Total number of dots

64 460 (293 × 220) dots

Power, general

Used batteries

AAA Nickel Metal Hydride batteries (2) 2.4 V
5 V (from USB cable)

Power consumption (when shooting)

1.45 W

Operating temperature range

0°C to +40°C (32°F to +104°F)

Storage temperature range

-20°C to +60°C (-4°F to +140°F)

Dimensions

84.5 × 39.8 × 28.6 mm
(3 3/8 × 1 5/8 × 1 3/16 inches)
(W/H/D, protruding portions not included)

Mass

Approx. 118 g (4.2 oz) (AAA Nickel Metal Hydride batteries, “Memory Stick,” and neck strap included)

BC-CS1 Ni-MH battery charger

Power requirements

AC 100 to 240V 50/60Hz

2.2 W

Output voltage

Size AA: DC 1.8V, 165 mA × 2

Size AAA: DC 1.8V, 70 mA × 2

Dimensions 70 × 29 × 74 mm (2 7/8 × 1 3/16 × 3 inches)
(W/H/D)

Mass Approx. 70g (2.5 oz.)

Operating temperature range

0°C to 40°C (32°F to 104°F)

Accessories

- Size AAA Ni-MH batteries (2)
- Ni-MH battery charger (1)
- Power cord (mains lead) (1)
- USB cable (1)
- Neck strap (1)
- “Memory Stick” (8MB) (1)
- CD-ROM (SPVD-008) (1)
- Operating instructions (1)

Design and specifications are subject to change without notice.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK  OR DOTTED LINE WITH MARK  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

**ATTENTION AU COMPOSANT AYANT RAPPORT
À LA SÉCURITÉ!**

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE  SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈSES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPÉMENTS PUBLIÉS PAR SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer.

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, through functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit Board Repairing
 - Keep the temperature of the soldering iron around 270°C during repairing.
 - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
 - Be careful not to apply force on the conductor when soldering or unsoldering.

Unleaded solder

Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead.
(Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size.)

**: LEAD FREE MARK**

Unleaded solder has the following characteristics.

- Unleaded solder melts at a temperature about 40°C higher than ordinary solder.
Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time.
Soldering irons using a temperature regulator should be set to about 350°C.
Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!
- Strong viscosity
Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.
- Usable with ordinary solder
It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

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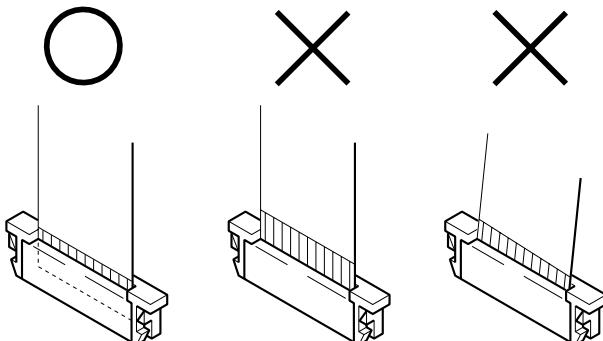
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COVER

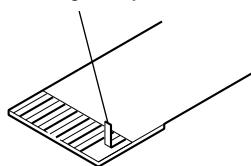
SECTION 1 SERVICE NOTE

1-1. NOTE FOR REPAIR

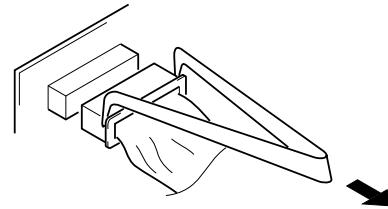
Make sure that the flat cable and flexible board are not cracked or bent at the terminal.
Do not insert the cable insufficiently nor crookedly.



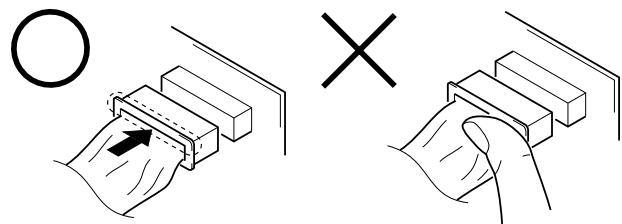
Cut and remove the part of gilt which comes off at the point.
(Be careful or some pieces of gilt may be left inside)



When remove a connector, don't pull at wire of connector.
It is possible that a wire is snapped.



When installing a connector, don't press down at wire of connector.
It is possible that a wire is snapped.



1-2. DISCHARGING OF THE SL-59 FLEXIBLE BOARD'S CHARGING CAPACITOR (C601)

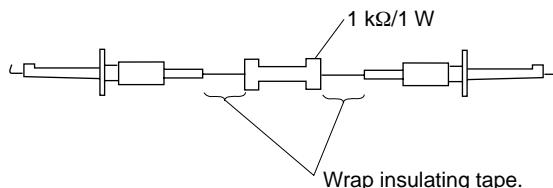
The charging capacitor (C601) of the SL-59 flexible board is charged up to the maximum 300 V potential.

There is a danger of electric shock by this high voltage when the battery is handled by hand. The electric shock is caused by the charged voltage which is kept without discharging when the main power of the unit is simply turned off. Therefore, the remaining voltage must be discharged as described below.

1-2-1. Preparing the Short Jig

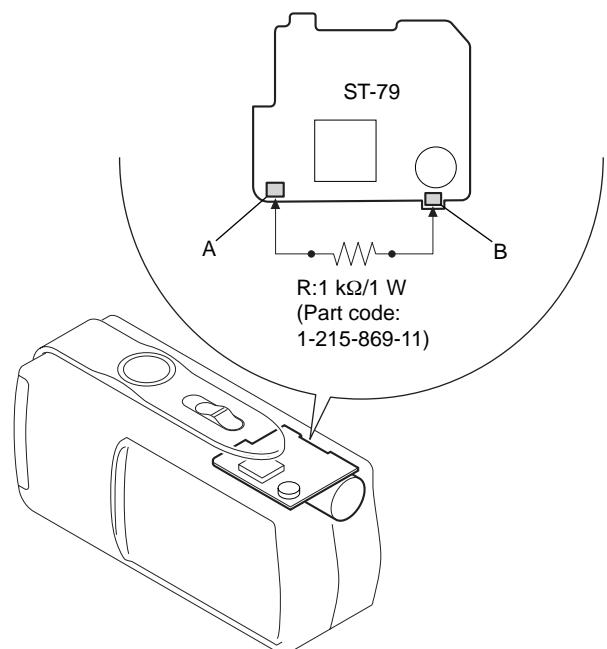
To preparing the short jig, a small clip is attached to each end of a resistor of 1 kΩ / 1 W (1-215-869-11).

Wrap insulating tape fully around the leads of the resistor to prevent electrical shock.



1-2-2. Discharging the Capacitor

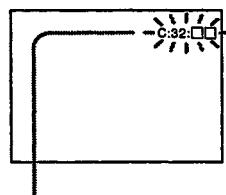
Short-circuit between the A (positive) and the B (negative) terminals on the ST-79 board with the short jig about 10 seconds.



1-3. DESCRIPTION ON SELF-DIAGNOSIS DISPLAY

Self-diagnosis display

The camera has a self-diagnosis display. This function displays the camera condition with five-digits (a combination of a letter and figures) on the LCD screen. If this occurs check the following code chart. The five-digits display informs you of the camera's current condition. The last two digits (indicated by □□) will differ depending on the state of the camera.



Self-diagnosis display

- C: □□: □□

You can reverse the camera malfunction yourself. (However, contact your Sony dealer or local authorized Sony service facility when you cannot recover from the camera malfunction.)

- E: □□: □□

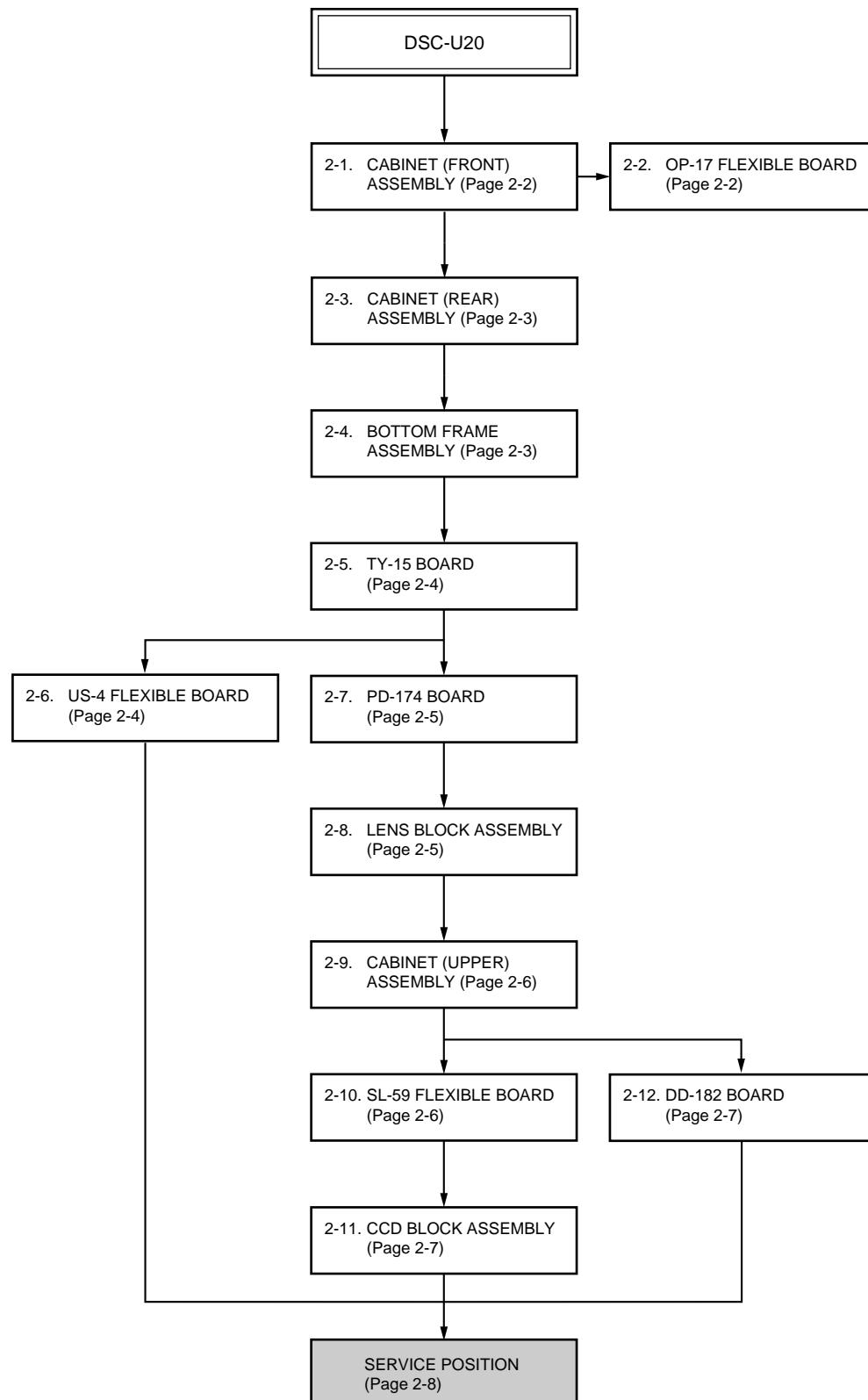
Contact your Sony dealer or local authorized Sony service facility.

Display Code	Countermeasure	Cause	Caution Display During Error
C:32:□□	Turn the power off and on again.	Trouble with hardware.	SYSTEM ERROR
C:13:□□	Format the "Memory stick".	Unformatted memory stick is inserted.	FORMAT ERROR
	Insert a new "Memory Stick".	Memory stick is broken.	MEMORY STICK ERROR
E:61:□□	Checking of lens drive circuit.	When failed in the focus initialization.	—
E:91:□□	Checking of flash unit or replacement of flash unit.	Abnormality when flash is being charged.	



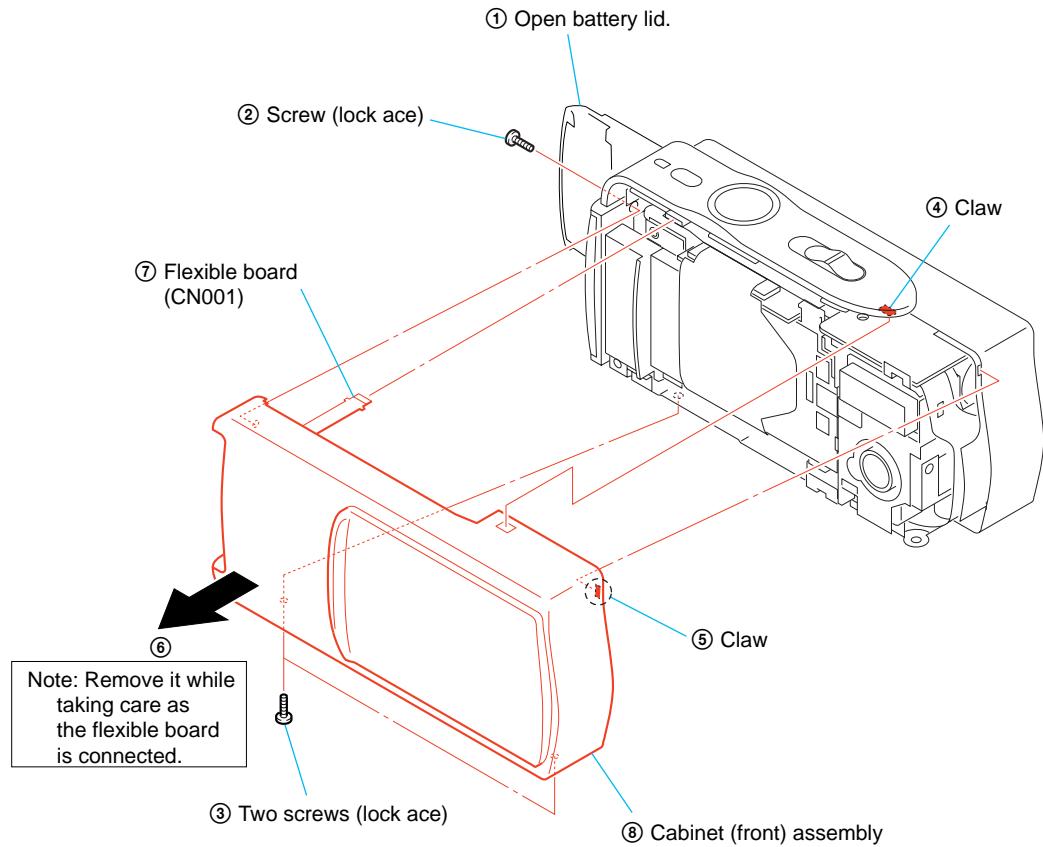
SECTION 2 DISASSEMBLY

The following flow chart shows the disassembly procedure.

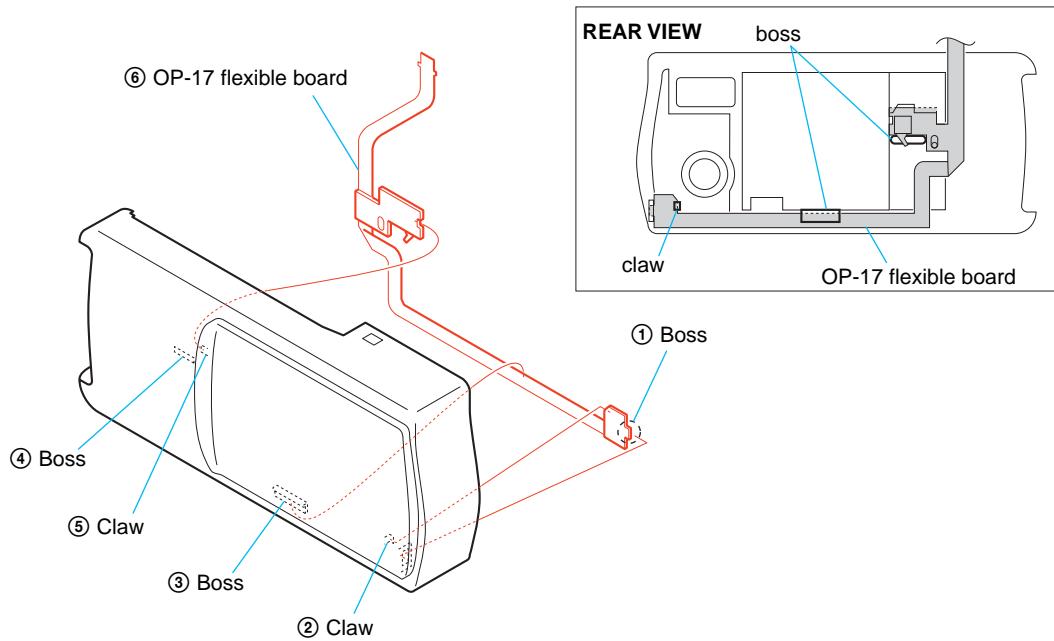


Note: Follow the disassembly procedure in the numerical order given.

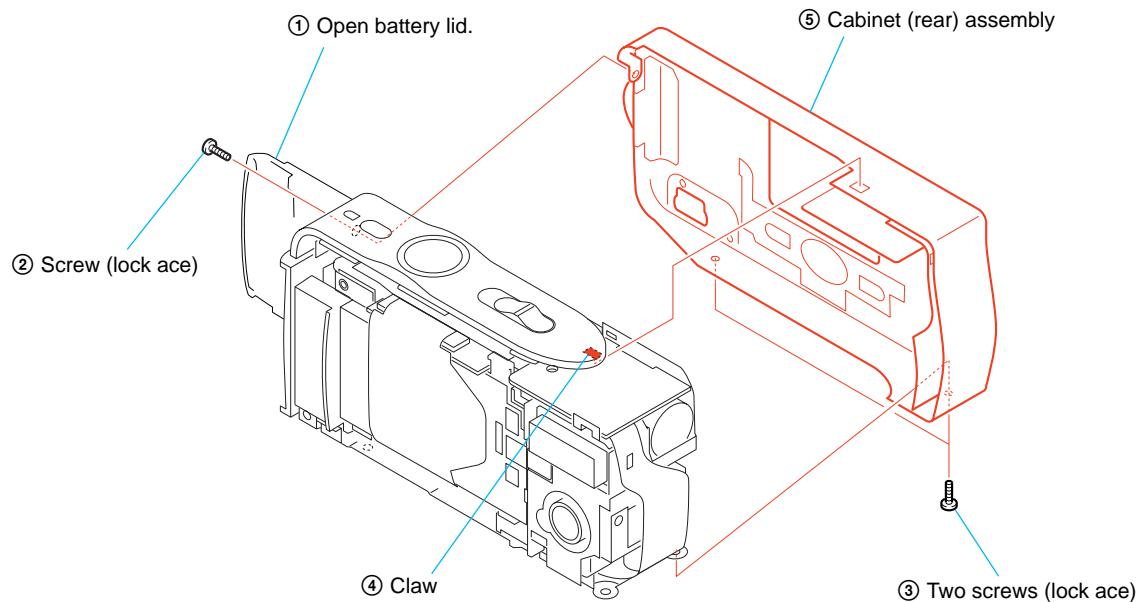
2-1. CABINET (FRONT) ASSEMBLY



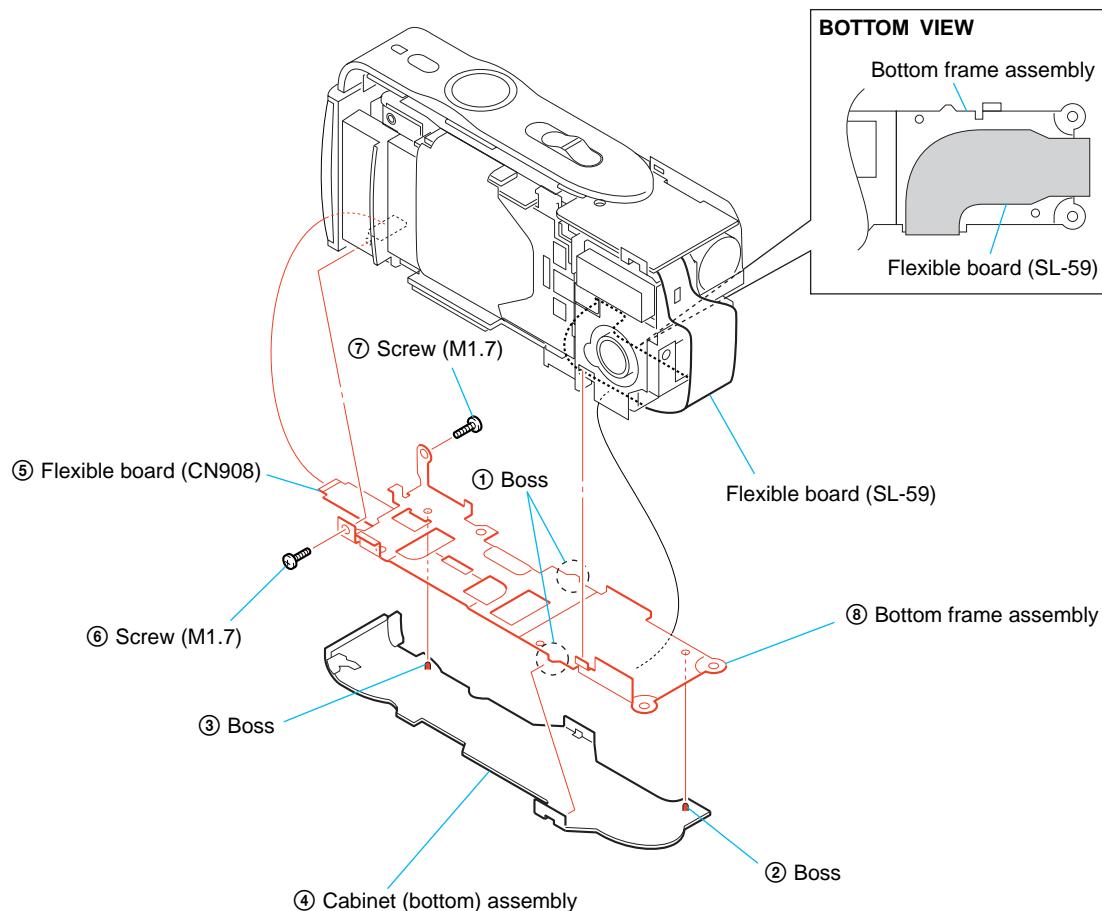
2-2. OP-17 FLEXIBLE BOARD



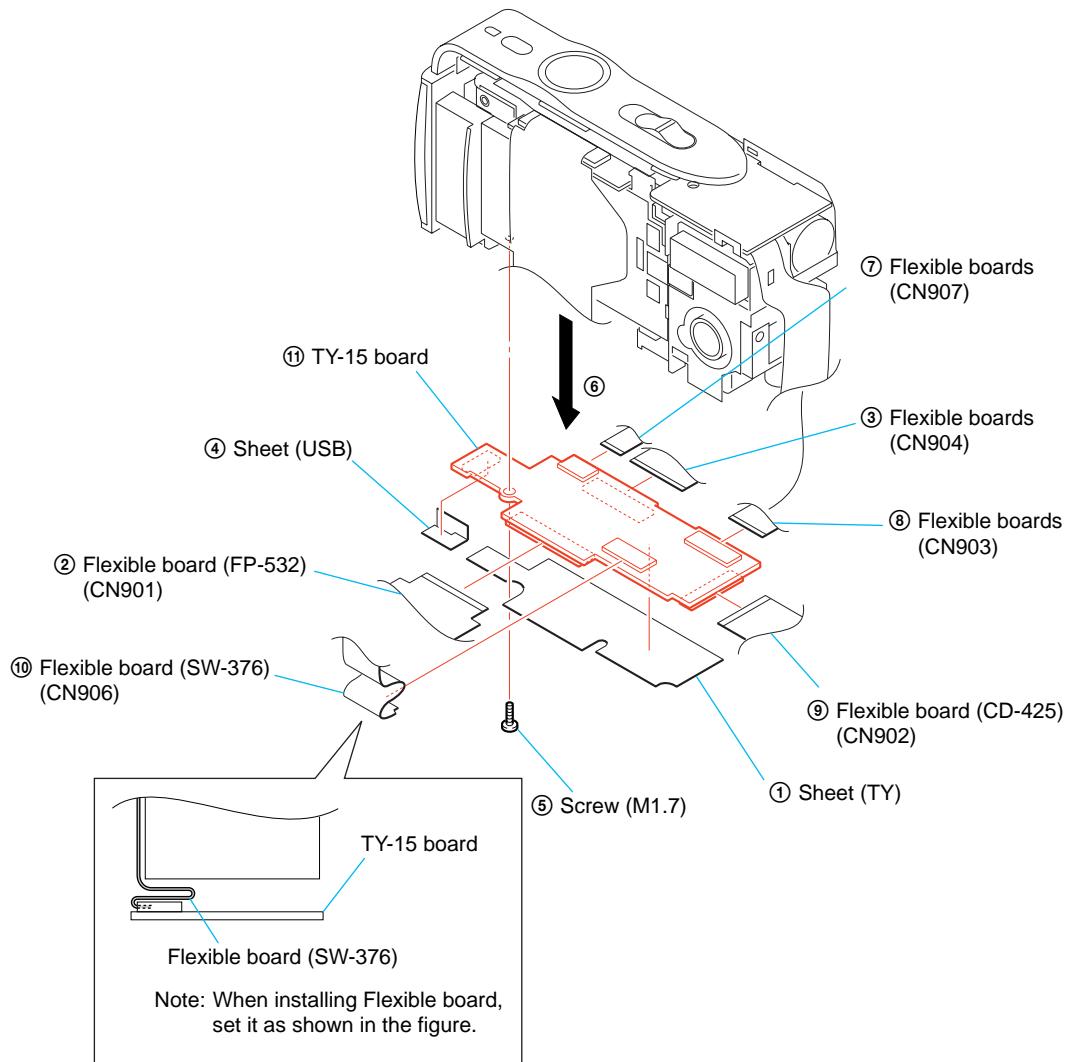
2-3. CABINET (REAR) ASSEMBLY



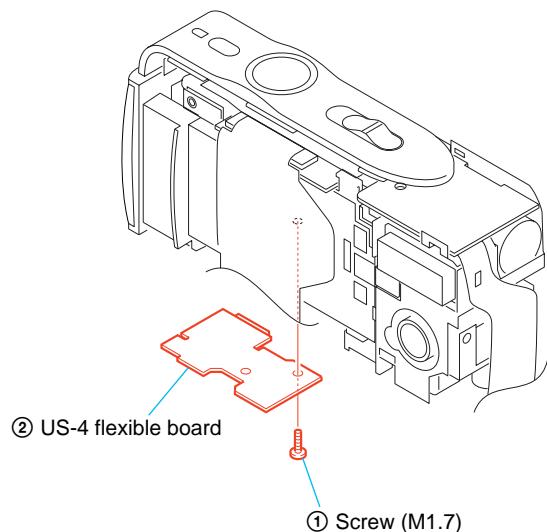
2-4. BOTTOM FRAME ASSEMBLY



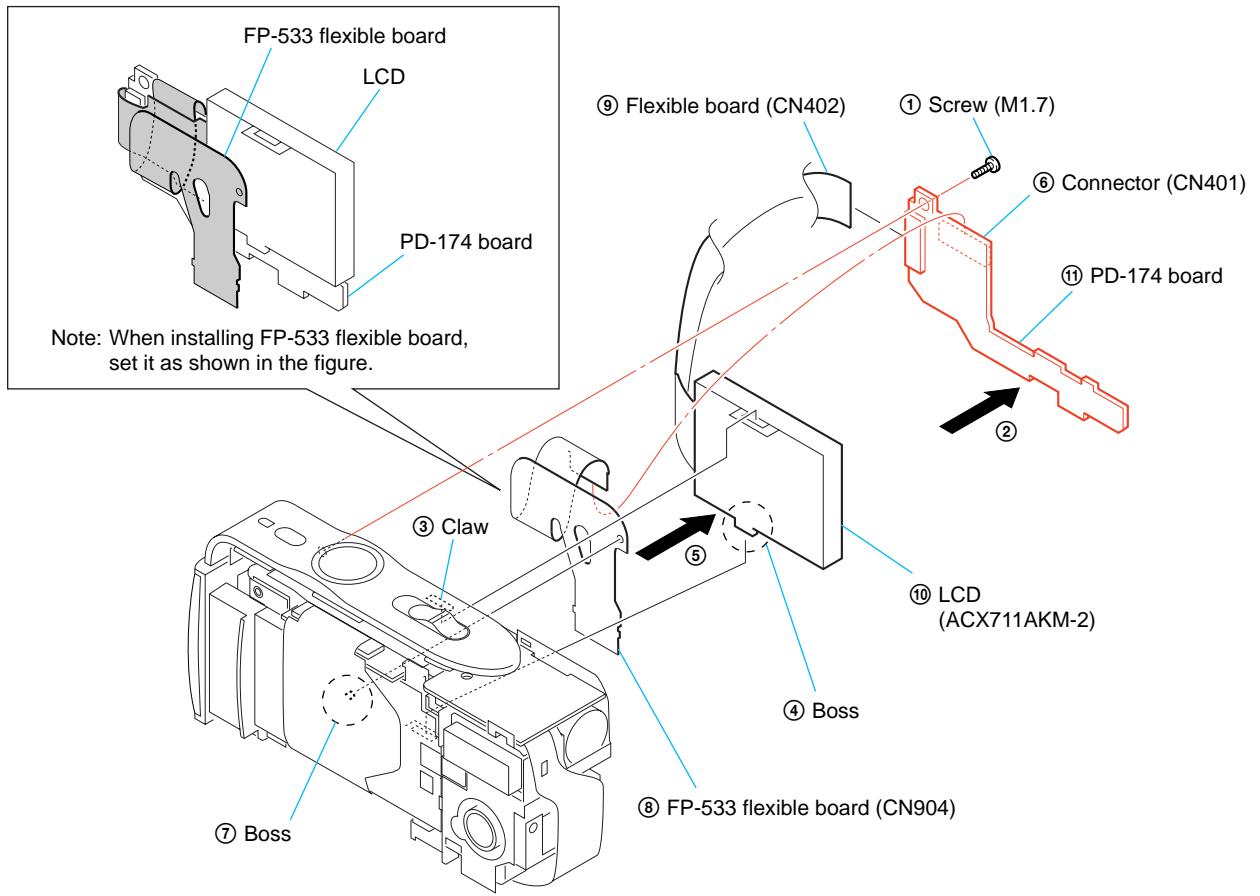
2-5. TY-15 BOARD



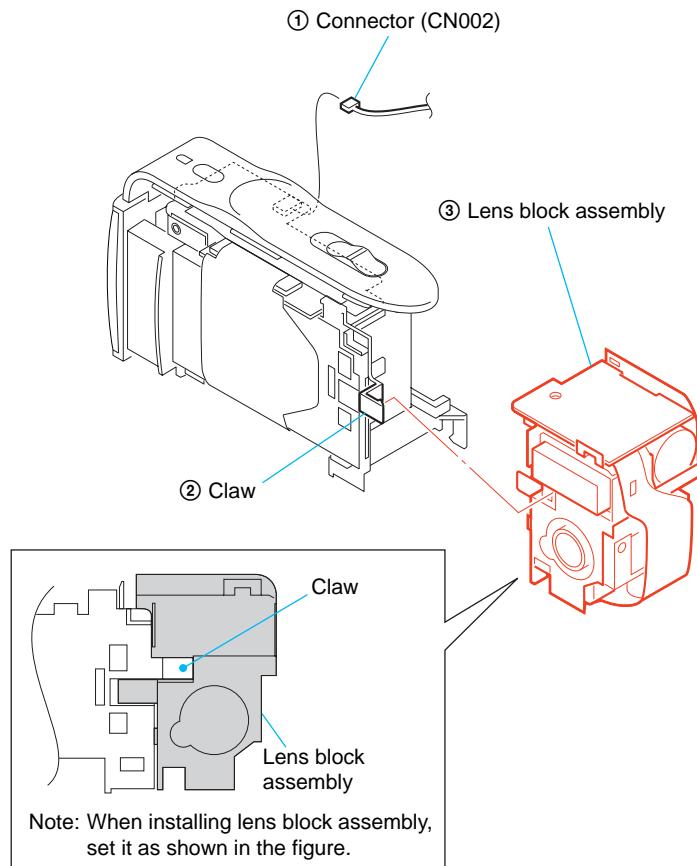
2-6. US-4 FLEXIBLE BOARD



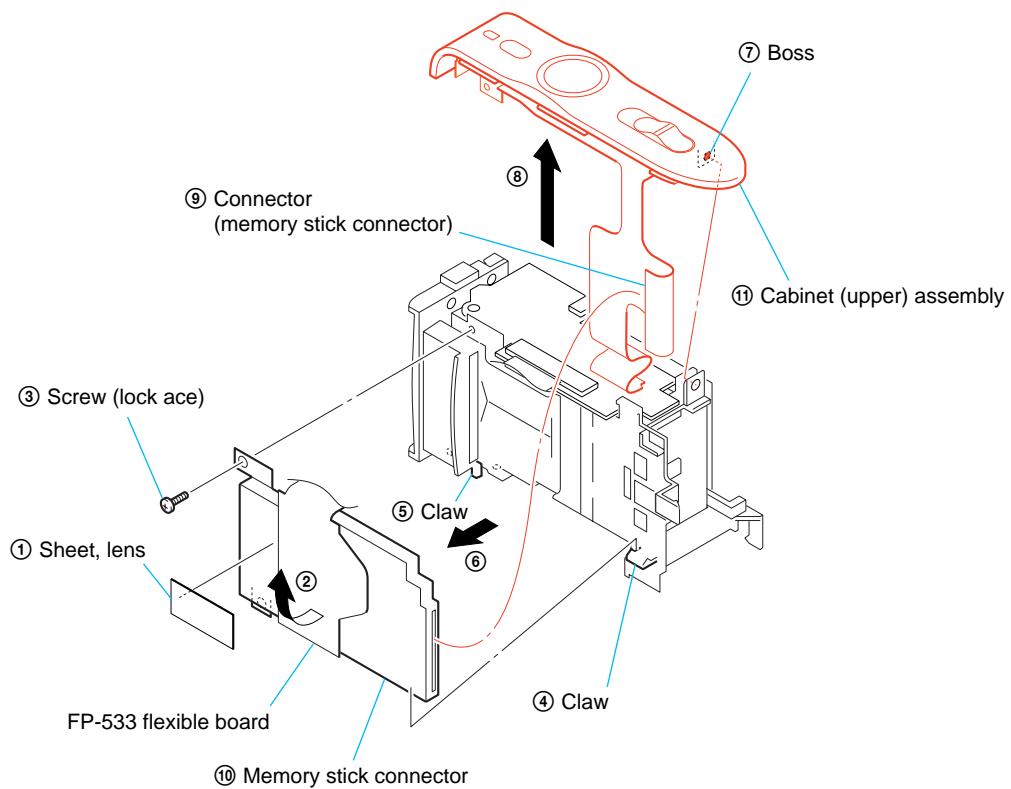
2-7. PD-174 BOARD



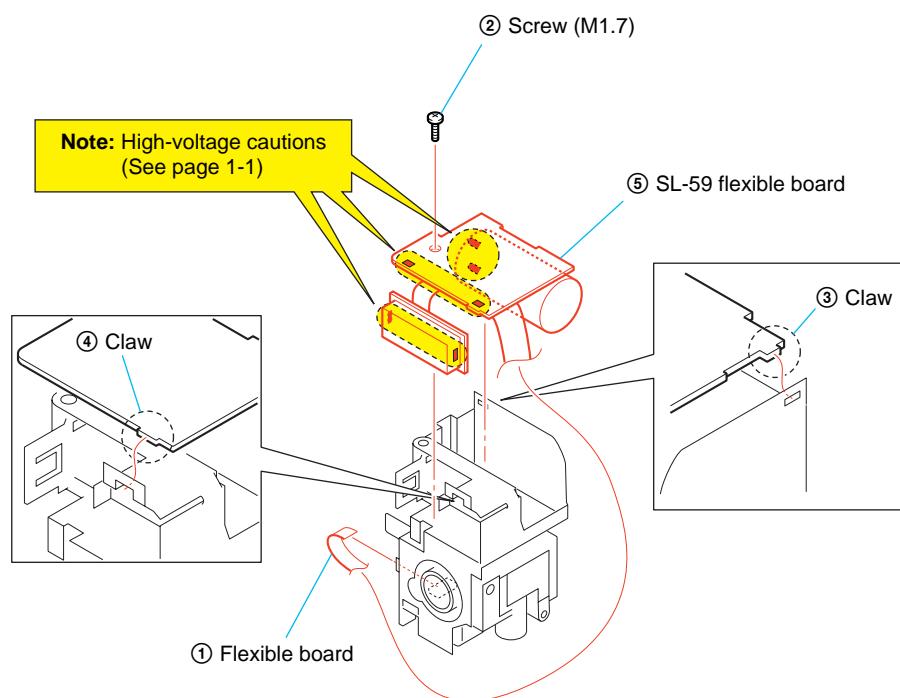
2-8. LENS BLOCK ASSEMBLY



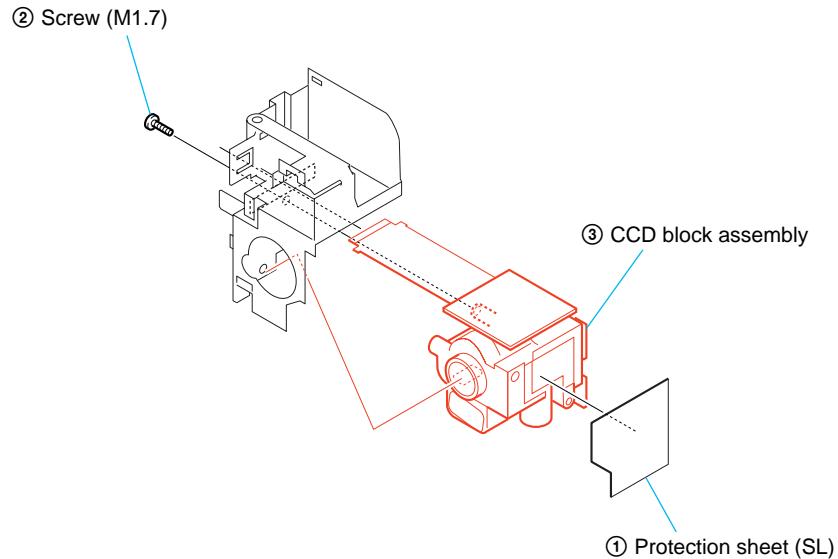
2-9. CABINET (UPPER) ASSEMBLY



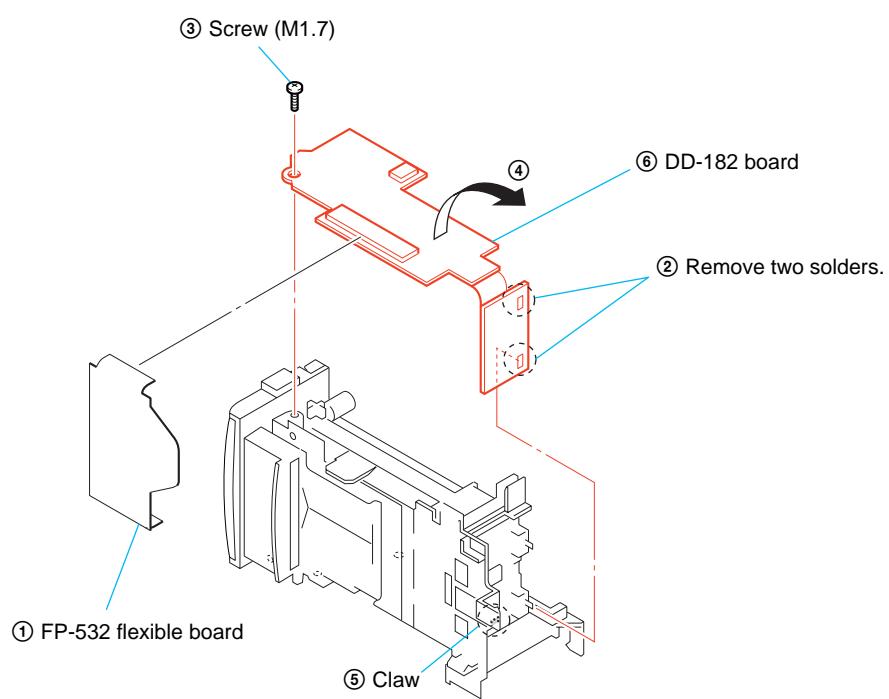
2-10. SL-59 FLEXIBLE BOARD



2-11.CCD BLOCK ASSEMBLY



2-12.DD-182 BOARD



[SERVICE POSITION]

Insert the Memory Stick and the Batteries to DSC-U20, and connect the HASP key to USB connector of PC. The following setup is performed using the application for adjustment (SEUS).

Setting the “Forced STILL/PLAY mode Power ON” mode

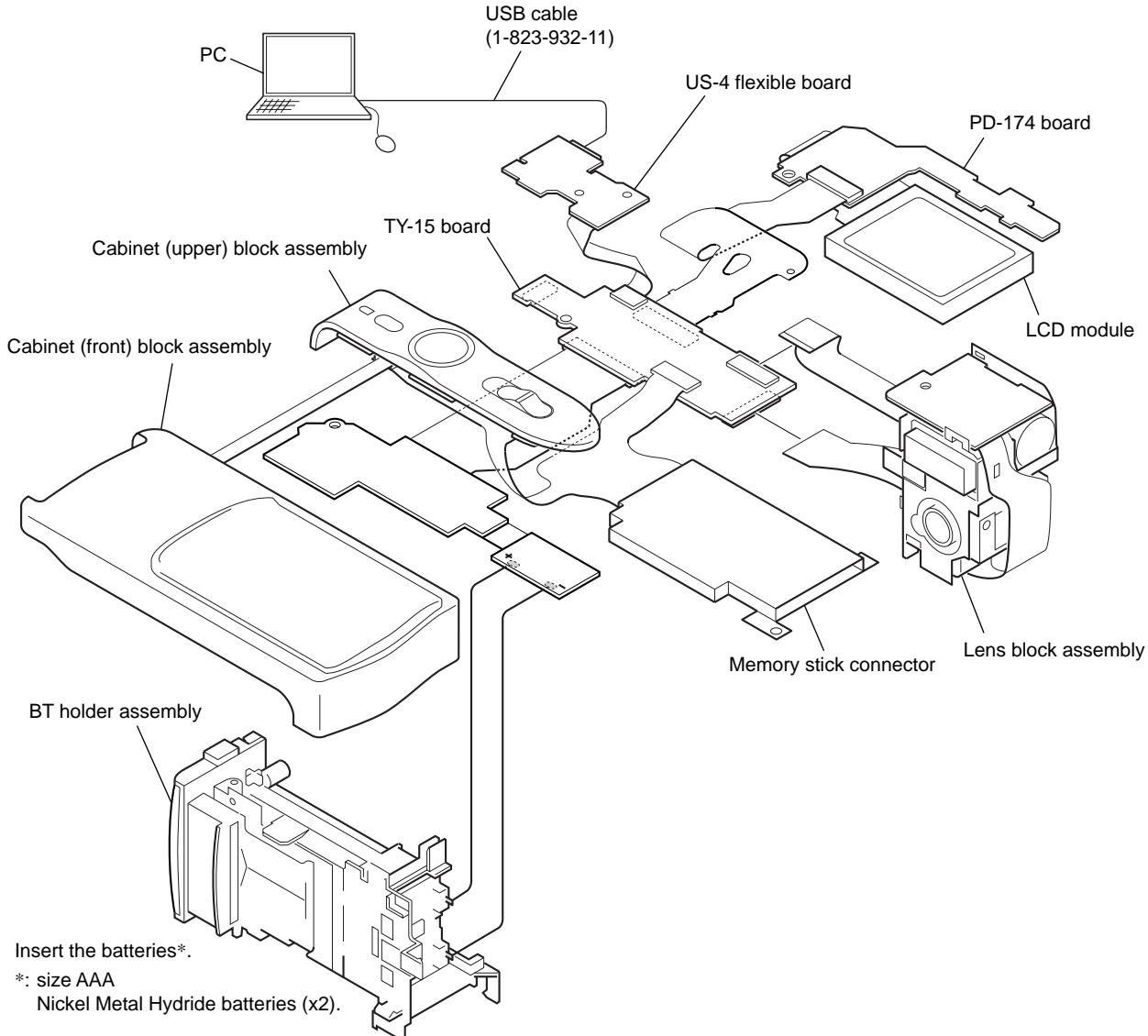
- 1) Select page: 00, address: 01, and set data: 01.
- 2) Select page: 2F, address: 11, and write data: E0.
- 3) Select page: 2F, address: 12, and write data: BC.
- 4) Select page: 20, address: 00, and set data: 29.
- 5) Select page: 20, address: 01, and write data: 29.

At this time, the set is reset and the power is turns off once and then on again. Accordingly, the message “Receive Packet Error” is displayed on the SEUS screen, and the SEUS goes in “disconnect” state, but this is not a trouble. Click **Connect** on the SEUS screen to restore the “connected” state.

- 6) Select page: 00, address: 01, and set data: 01.
- 7) Select page: 2F, address: 21, and write the following data.
02: STILL mode
03: PLAY mode

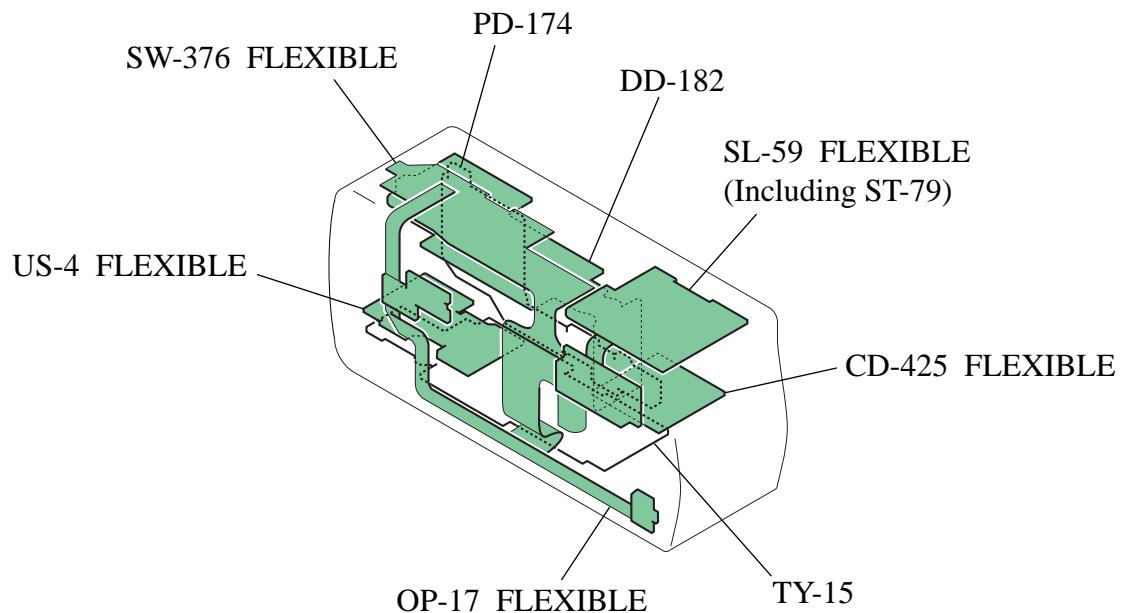
Exiting the “Forced Power ON mode”

- 1) Select page: 00, address: 01, and set data: 01.
- 2) Select page: 2F, address: 21, and write data: 00.
- 3) Select page: 2F, address: 12, and write data: 3C.
- 4) Select page: 2F, address: 11, and write data: 60.
- 5) Select page: 00, address: 01, and set data: 00.





2-13.CIRCUIT BOARDS LOCATION



Board Name	Function
CD-425 FLEXIBLE	CCD IMAGER, CAMERA MODULE
TY-15	CAMERA DSP, MAIN CPU, MEMORY, LENS DRIVE, HI CONTROL
OP-17 FLEXIBLE	LENS COVER DETECT
PD-174	LCD DRIVE, CONTROL SWITCH
DD-182	DC-IN, DC/DC CONVERTER
SL-59 FLEXIBLE (Including ST-79)	CHARGING CAPACITOR, FLASH UNIT
ST-79	FLASH DRIVE
US-4 FLEXIBLE	USB CONNECTOR
SW-376 FLEXIBLE	CONTROL SWITCH, MS CONNECTOR

COVER

3. BLOCK DIAGRAMS

Link

- OVERALL BLOCK DIAGRAM (1/2)

- POWER BLOCK DIAGRAM (1/2)

- OVERALL BLOCK DIAGRAM (2/2)

- POWER BLOCK DIAGRAM (2/2)

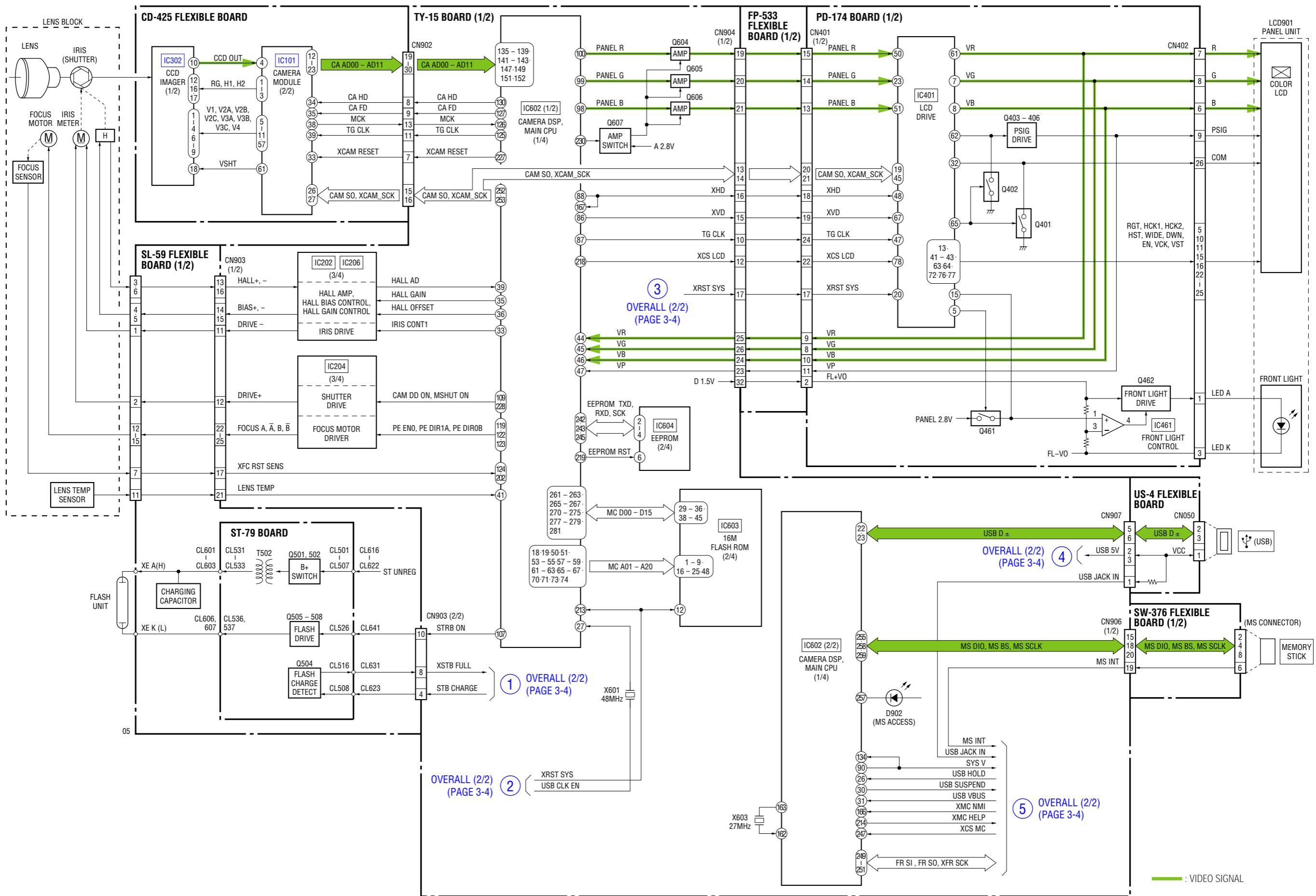


SECTION 3

BLOCK DIAGRAMS

3. BLOCK DIAGRAMS

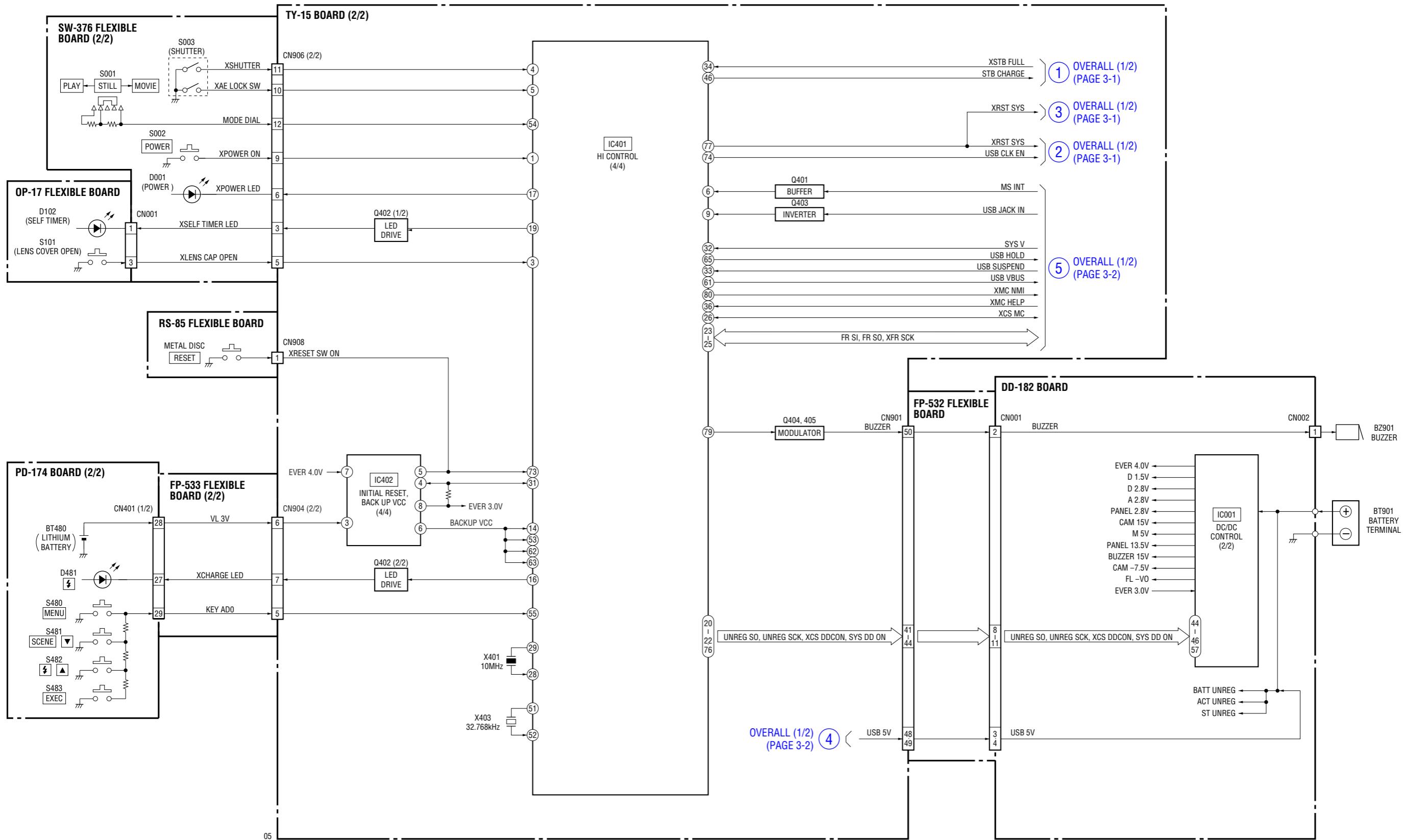
3-1. OVERALL BLOCK DIAGRAM (1/2) () : Number in parenthesis () indicates the division number of schematic diagram where the component is located.





3. BLOCK DIAGRAMS

3-2. OVERALL BLOCK DIAGRAM (2/2) () : Number in parenthesis () indicates the division number of schematic diagram where the component is located.

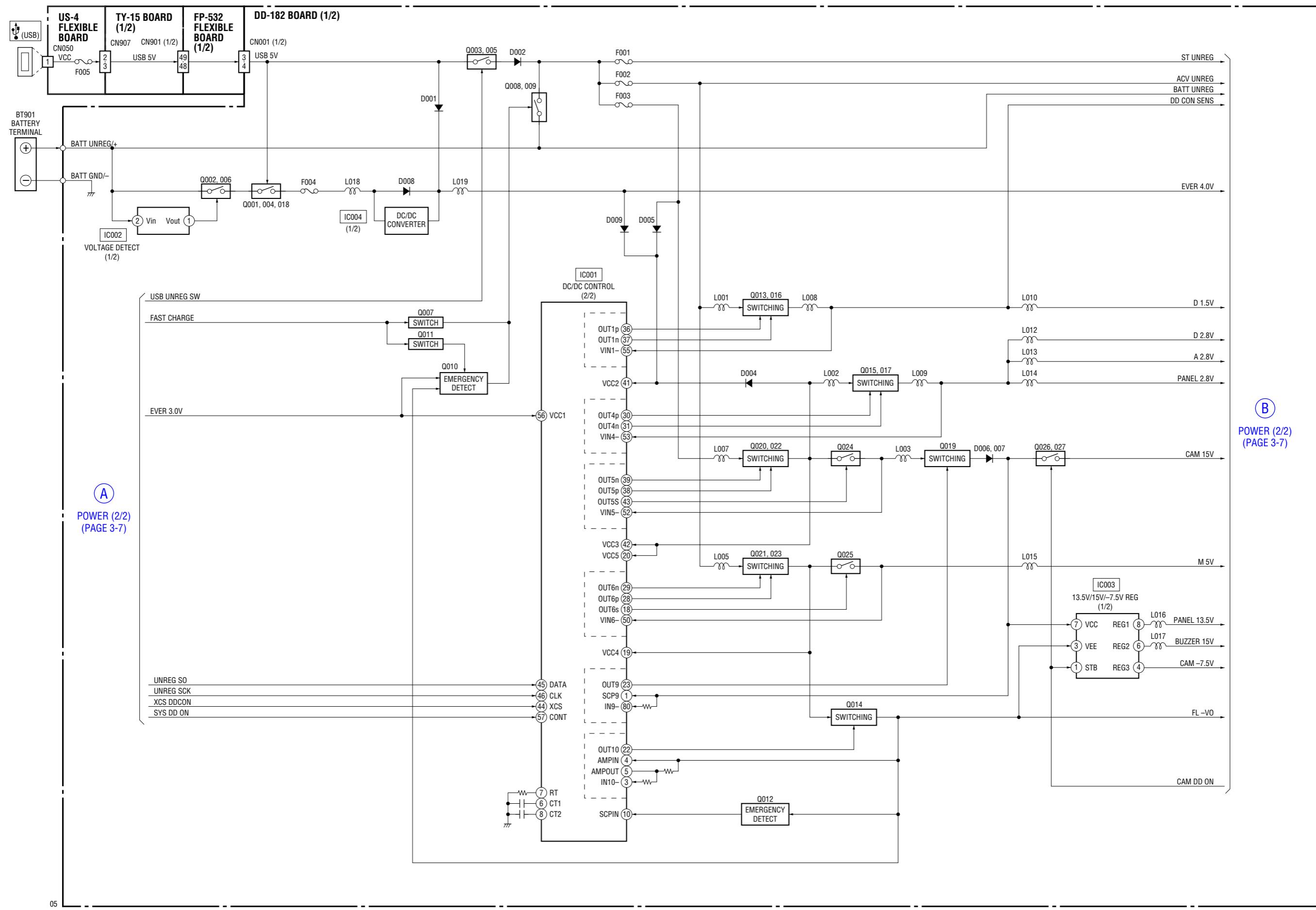




3. BLOCK DIAGRAMS

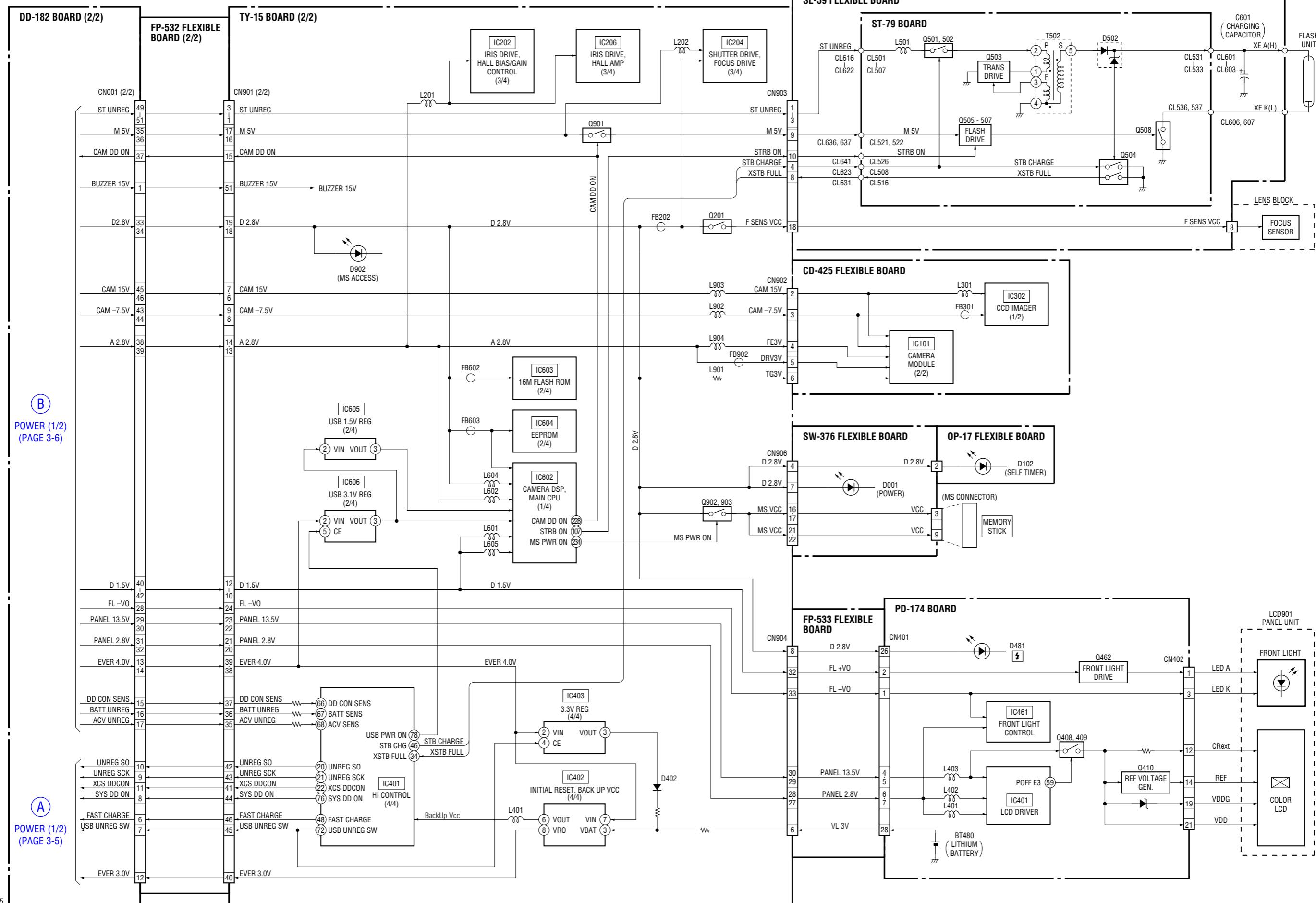
3-3. POWER BLOCK DIAGRAM (1/2)

() : Number in parenthesis () indicates the division number of schematic diagram where the component is located.





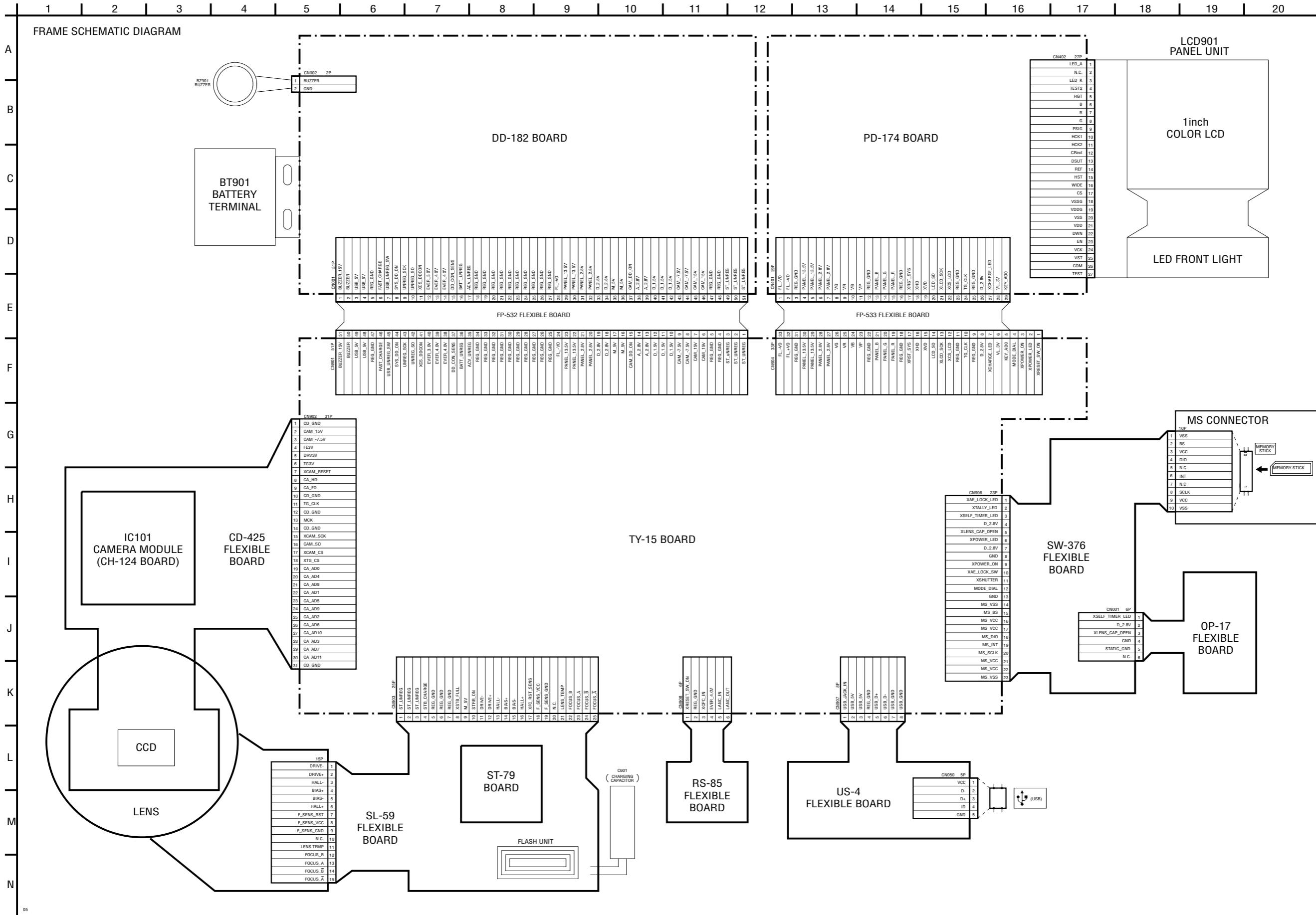
3-4. POWER BLOCK DIAGRAM (2/2) () : Number in parenthesis () indicates the division number of schematic diagram where the component is located.



SECTION 4

PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM

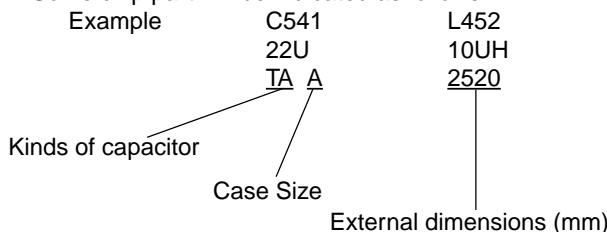


4-2. SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR SCHEMATIC DIAGRAMS
(In addition to this, the necessary note is printed in each block)

(For schematic diagrams)

- All capacitors are in μF unless otherwise noted. $\text{pF} : \mu\text{F}$. 50 V or less are not indicated except for electrolytics and tantalums.
- Chip resistors are 1/10 W unless otherwise noted. $\text{k}\Omega=1000 \Omega$, $\text{M}\Omega=1000 \text{k}\Omega$.
- Caution when replacing chip parts.
New parts must be attached after removal of chip.
Be careful not to heat the minus side of tantalum capacitor, Because it is damaged by the heat.
- Some chip part will be indicated as follows.



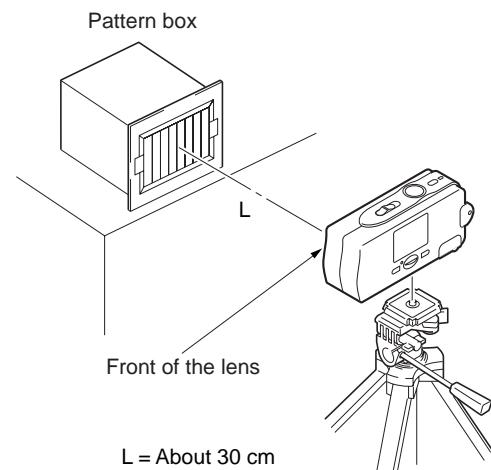
- Constants of resistors, capacitors, ICs and etc with XX indicate that they are not used.
In such cases, the unused circuits may be indicated.
- Parts with \star differ according to the model/destination.
Refer to the mount table for each function.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- Signal name
 XEDIT → EDIT PB/XREC → PB/REC
 • : non flammable resistor
 • : fuseable resistor
 • : panel designation
 • : B+ Line
 • : B- Line
 • : IN/OUT direction of (+, -) B LINE.
 • : adjustment for repair.
 • : VIDEO SIGNAL (ANALOG)
 • : AUDIO SIGNAL (ANALOG)
 • : VIDEO/AUDIO SIGNAL
 • : VIDEO/AUDIO/SERVO SIGNAL
 • : SERVO SIGNAL
 • Circled numbers refer to waveforms.

(Measuring conditions voltage and waveform)

- Voltages and waveforms are measured between the measurement points and ground when camera shoots color bar chart of pattern box. They are reference values and reference waveforms.
(VOM of DC 10 M Ω input impedance is used)
- Voltage values change depending upon input impedance of VOM used.)

Note : The components identified by mark \triangle or dotted line with mark \triangle are critical for safety.
Replace only with part number specified.

1. Connection



2. Adjust the distance so that the display of Fig. a can be obtain.

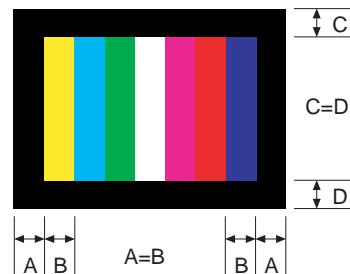


Fig.a (Picture on LCD display)

When indicating parts by reference number, please include the board name.

Note : Les composants identifiés par une marque \triangle sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifique.

COVER

4-2. SCHEMATIC DIAGRAMS

Link

• CD-425 FLEXIBLE BOARD (1/2) (CCD IMAGER)	• US-4 FLEXIBLE BOARD (USB CONNECTOR)
• CD-425 FLEXIBLE BOARD (2/2) (CAMERA MODULE)	• OP-17 FLEXIBLE BOARD (LENS COVER DETECT)
• SL-59 FLEXIBLE BOARD (CHARGING CAPACITOR, FLASH UNIT)	• SW-376 FLEXIBLE BOARD (CONTROL SWITCH, MS CONNECTOR)
• ST-79 BOARD (FLASH DRIVE)	• RS-85, FP-532, FP-533 FLEXIBLE BOARD

• COMMON NOTE FOR SCHEMATIC DIAGRAMS

• WAVEFORMS

COVER

4-2. SCHEMATIC DIAGRAMS

CD-425 FLEXIBLE BOARD

For Schematic Diagram

- Refer to page 4-37 for printed wiring board.
- Refer to page 4-57 for waveform.

1

2

3

4

5

6

7

8

9

A

B

C

D

E

F

G

H

CD-425 FLEXIBLE BOARD (1/2)

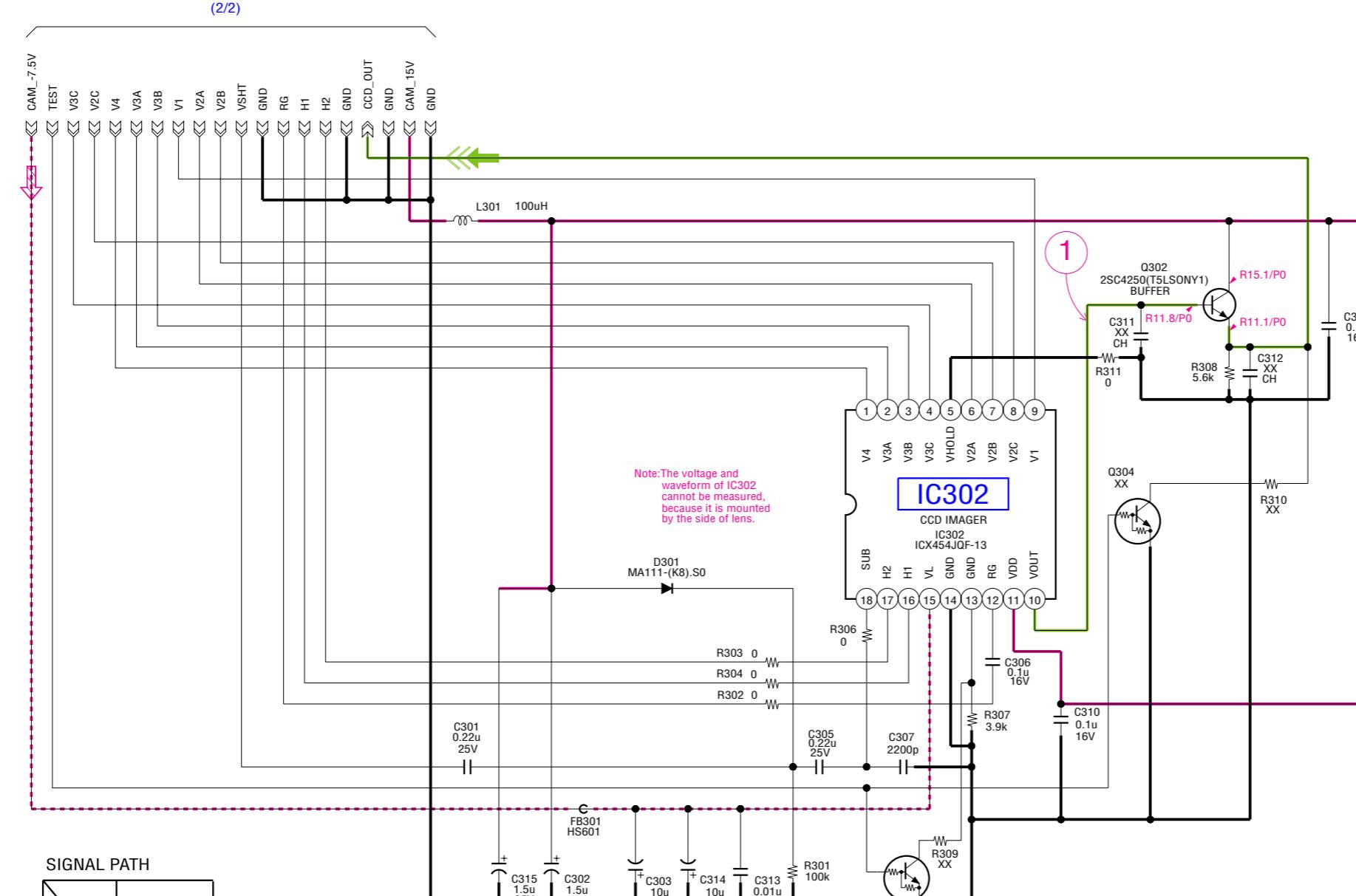
CCD IMAGER(CCD1 BLOCK)

XX MARK: NO MOUNT

NO MARK: REC/PB MODE

R: REC MODE

P: PB MODE

1
(2/2)

Precautions for Replacement of CCD Imager

- The CD-425 flexible board mounted as a repair part is not equipped with a CCD imager. When replacing this board, remove the CCD imager from the old one and mount it onto the new one.
- If the CCD imager has been replaced, carry out all the adjustments for the camera section.
- As the CCD imager may be damaged by static electricity from its structure, handle it carefully like for the MOS IC. In addition, ensure that the receiver is not covered with dusts nor exposed to strong light.



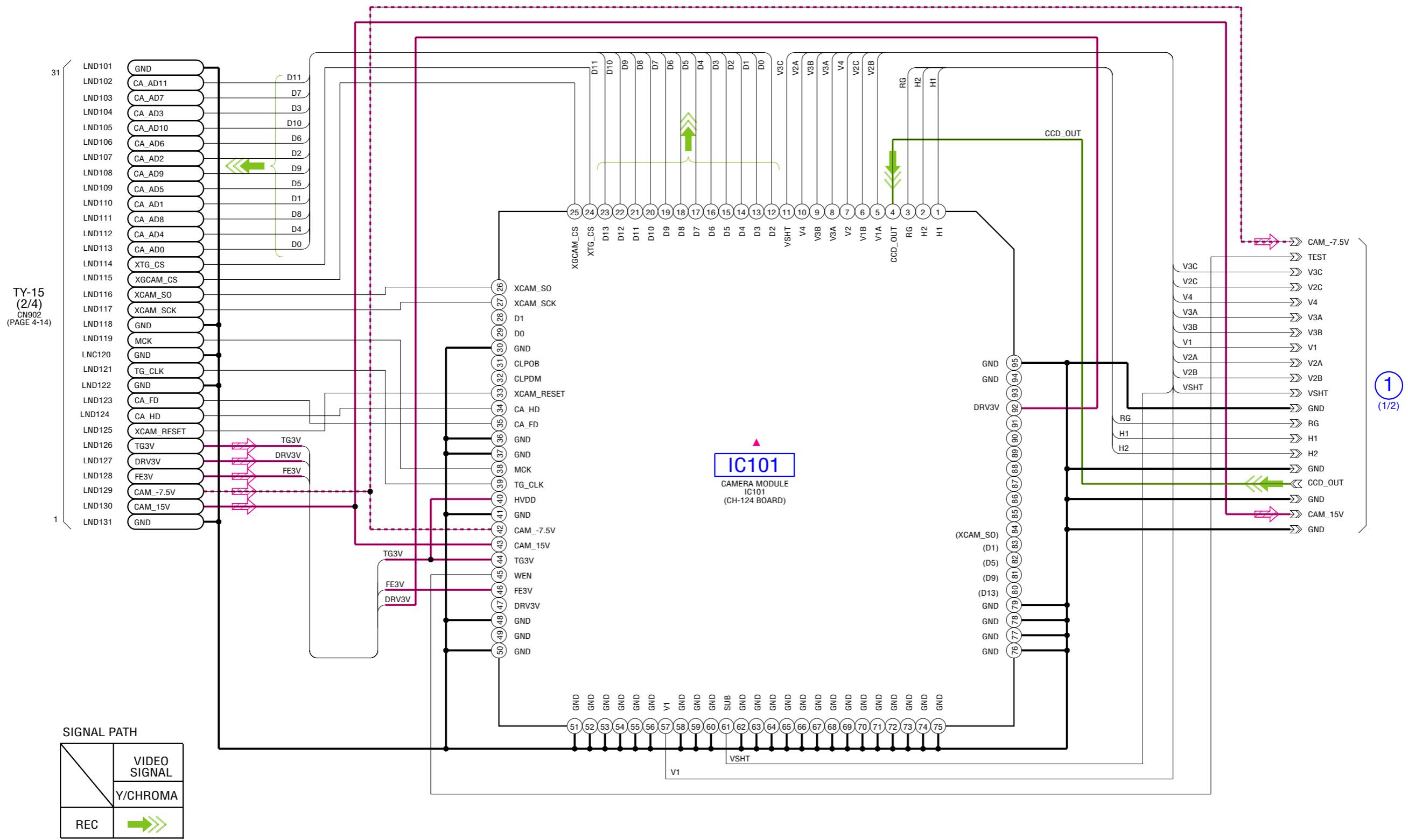
For Schematic Diagram

• Refer to page 4-37 for printed wiring board.

1 2 3 4 5 6 7 8 9 10 11 12

CD-425 FLEXIBLE BOARD(2/2) CAMERA MODULE(CH BLOCK)

▲:Voltage measurement of the CSP ICs
and the Transistors with mark,are
not possible.



Schematic diagrams of the TY-15, PD-174 and DD-182 boards are not shown.
Pages from 4-11 to 4-24 are not shown.



For Schematic Diagram

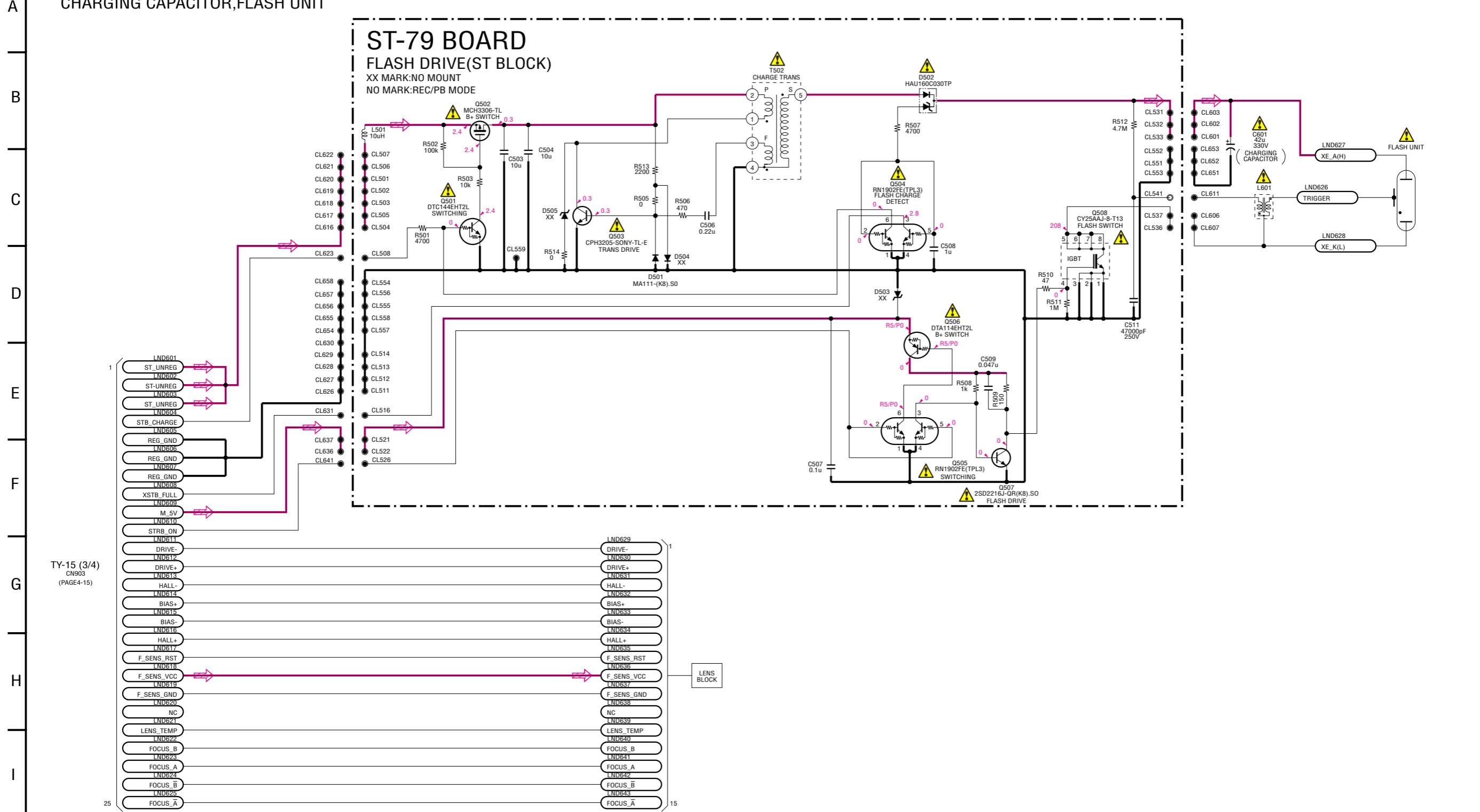
- Refer to page 4-45 for printed wiring board. (SL-59 FLEXIBLE BOARD)
- Refer to page 4-47 for printed wiring board. (ST-79 BOARD)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

SL-59 FLEXIBLE BOARD

CHARGING CAPACITOR,FLASH UNIT

(Including ST-79 board)



The components identified by mark \triangle or dotted line with mark \triangle are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque \triangle sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

COVER

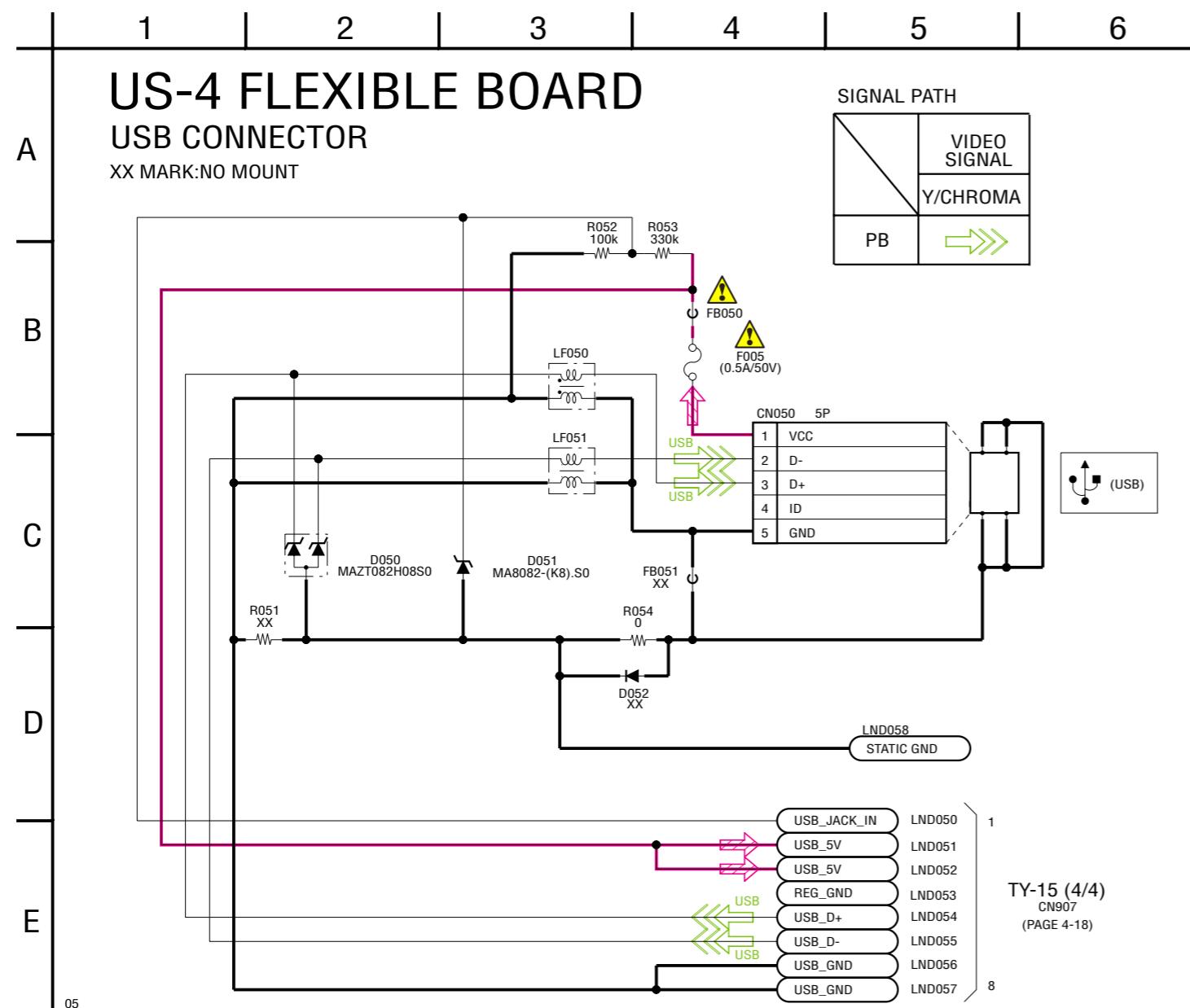
4-2. SCHEMATIC DIAGRAMS

US-4 FLEXIBLE BOARD

OP-17 FLEXIBLE BOARD

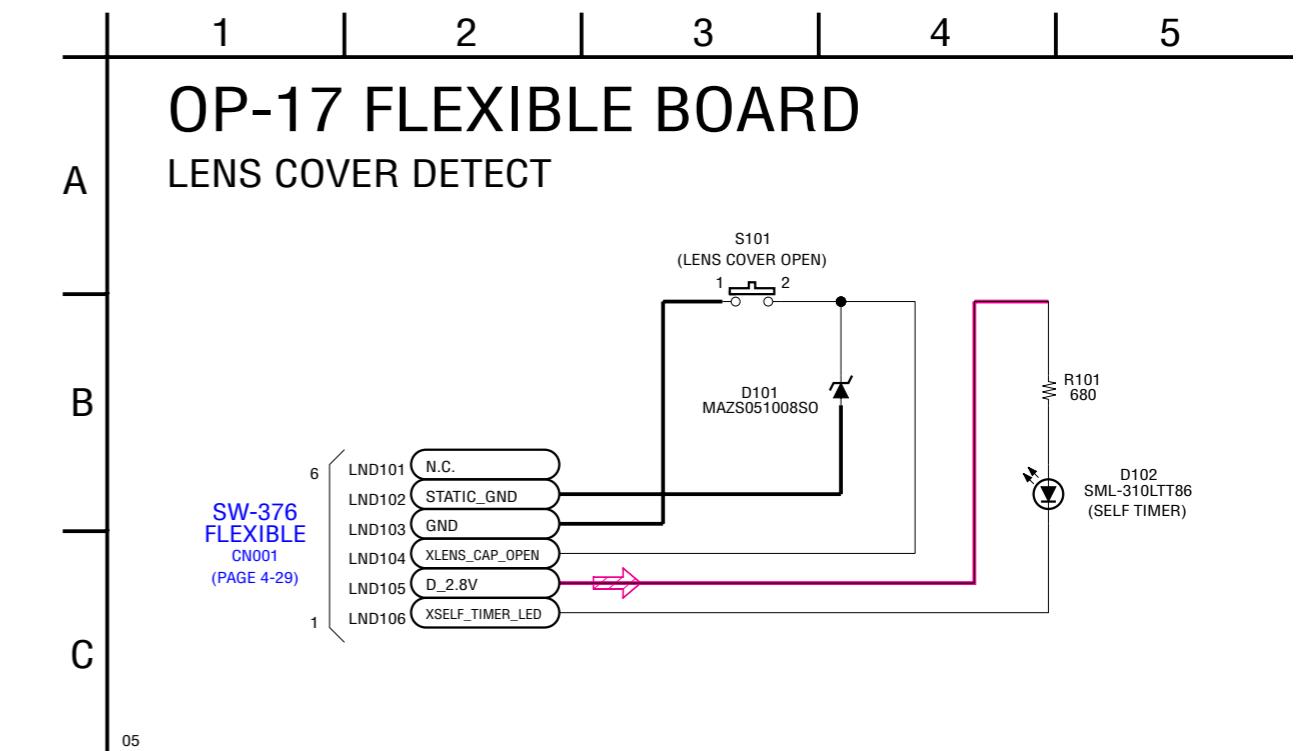
For Schematic Diagram

• Refer to page 4-49 for printed wiring board.



For Schematic Diagram

• Refer to page 4-51 for printed wiring board.

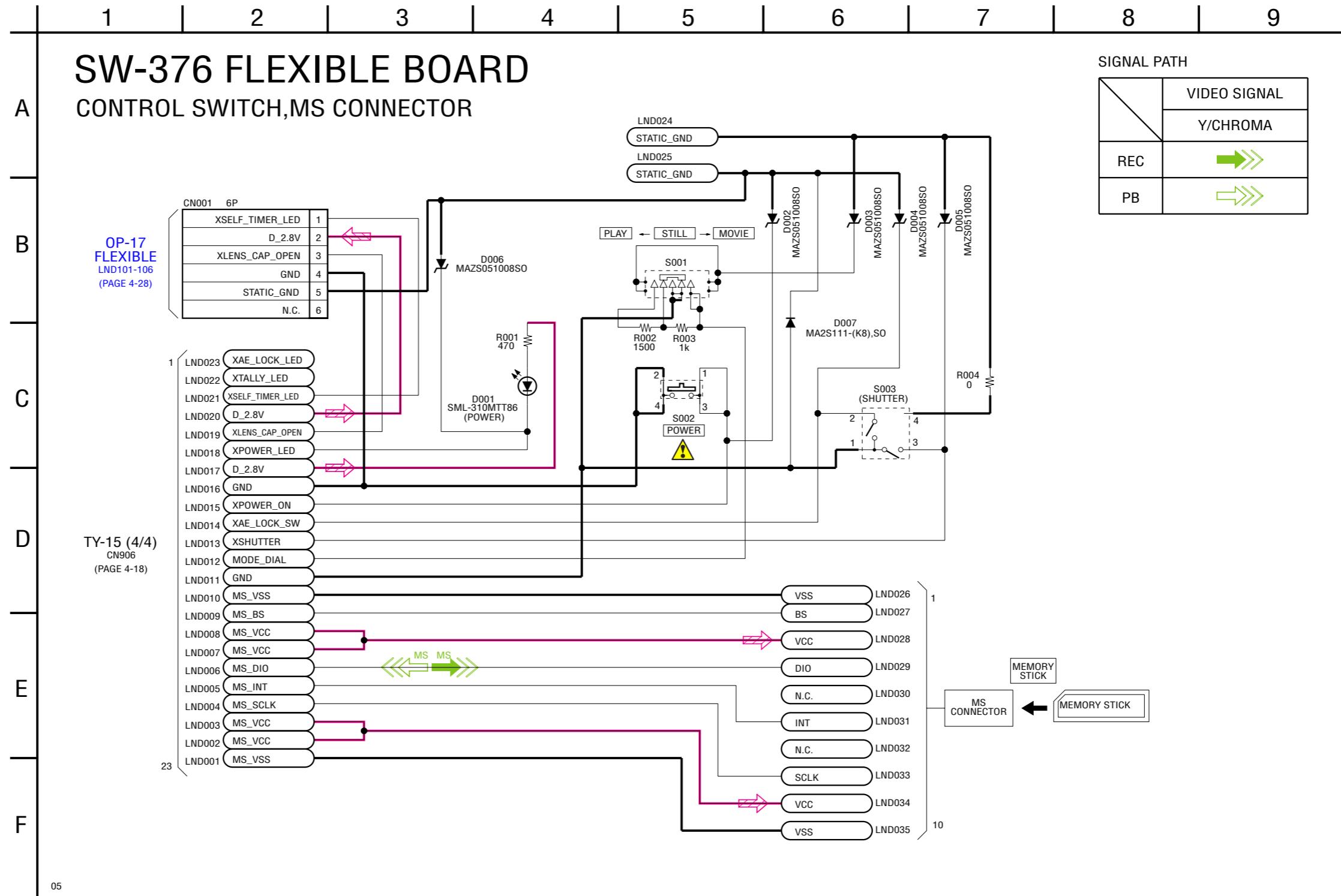


The components identified by mark or dotted line with mark are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.



For Schematic Diagram
• Refer to page 4-53 for printed wiring board.

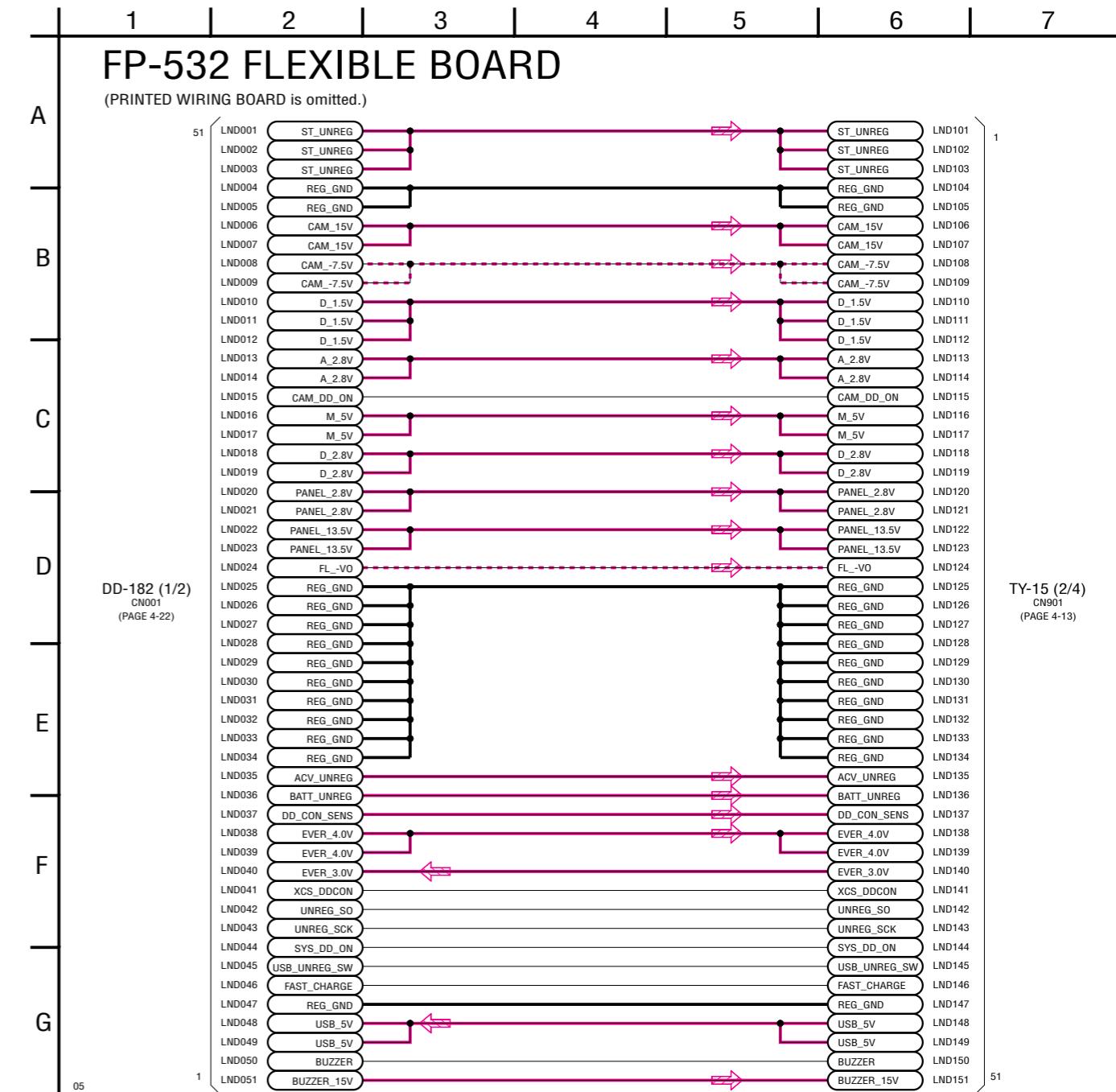
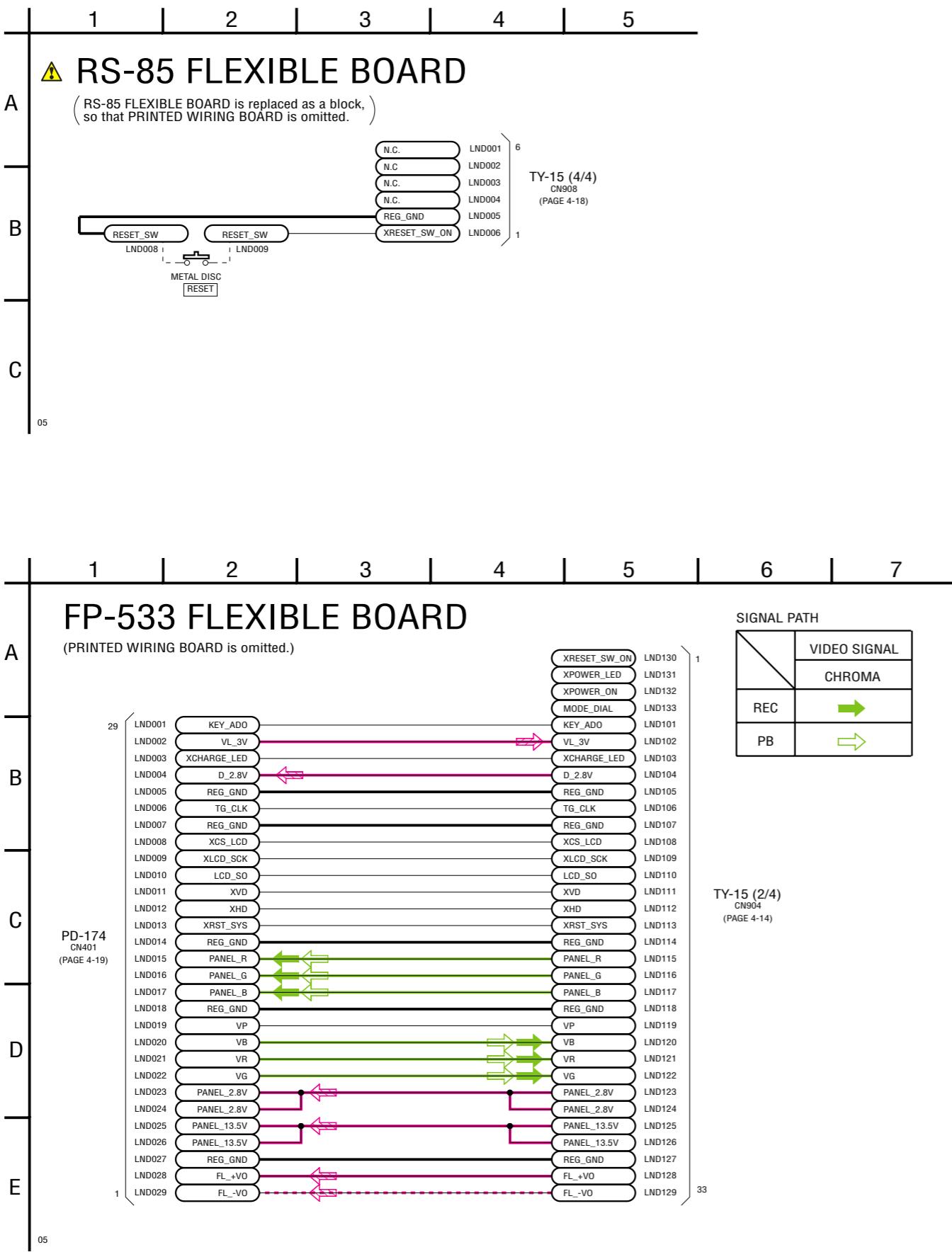


The components identified by mark \triangle or dotted line with mark \triangle are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque \triangle sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.



4-2. SCHEMATIC DIAGRAMS



The components identified by mark or dotted line with mark are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

COVER

4-3. PRINTED WIRING BOARDS

4-3. PRINTED WIRING BOARDS

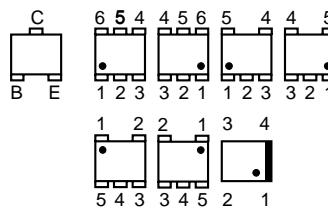
THIS NOTE IS COMMON FOR WIRING BOARDS
(In addition to this, the necessary note is printed in each block)

(For printed wiring boards)

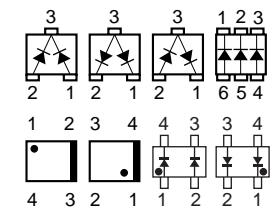
- : Uses unleaded solder.
- : Circuit board
- : Flexible board
- Pattern from the side which enables seeing.
- : Pattern of the rear side
- (The other layers' patterns are not indicated)
- Through hole is omitted.
- Circled numbers refer to waveforms.
- There are a few cases that the part printed on diagram isn't mounted in this model.
- : panel designation

- Chip parts.

Transistor



Diode



COVER

4-3. PRINTED WIRING BOARDS

Link

- CD-425 FLEXIBLE BOARD

- US-4 FLEXIBLE BOARD

- SL-59 FLEXIBLE BOARD

- OP-17 FLEXIBLE BOARD

- ST-79 BOARD

- SW-376 FLEXIBLE BOARD

- COMMON NOTE FOR PRINTED WIRING BOARDS

- WAVEFORMS

- MOUNTED PARTS LOCATION

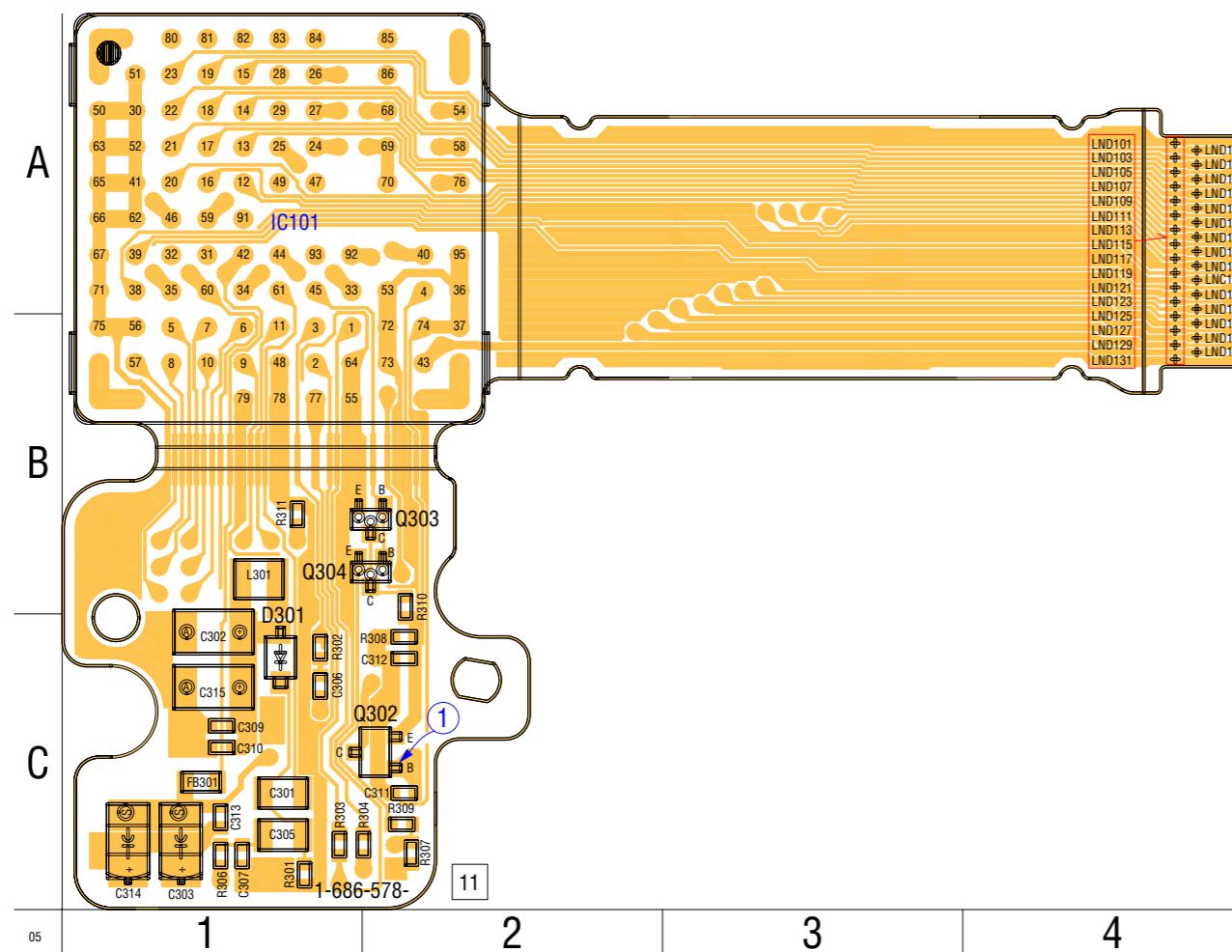
- CIRCUIT BOARDS LOCATION

CD-425 FLEXIBLE (CCD IMAGER, CAMERA MODULE)

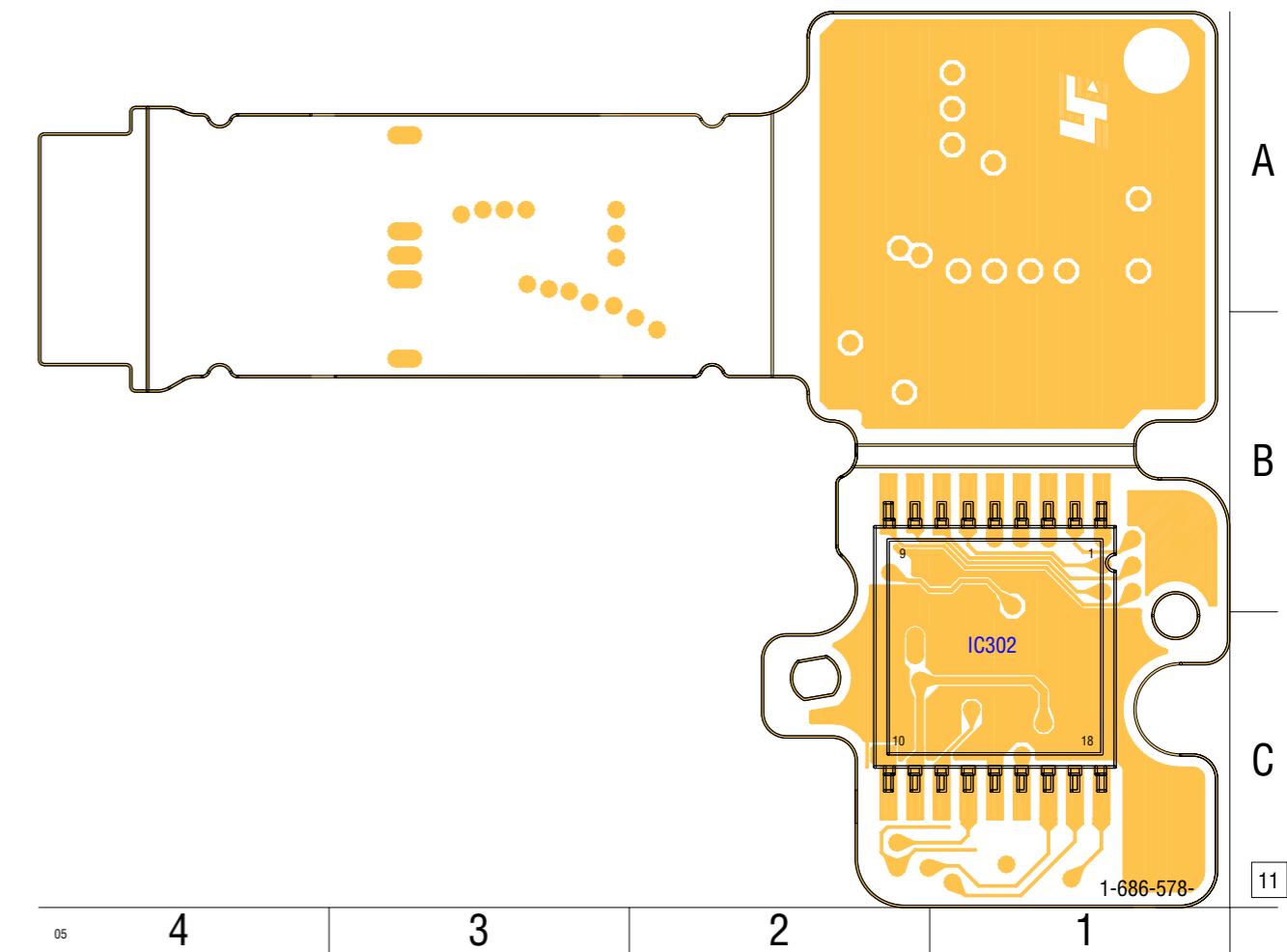
For Printed Wiring Board.

-  : Uses unleaded solder.
- CD-425 FLEXIBLE board is 3-layer print board. However, the pattern of layer 2 have not been included in the diagram.
- There are a few cases that the part isn't mounted in this model is printed on this diagram.
- See page 4-60 for printed parts location.

CD-425 FLEXIBLE BOARD (SIDE A)



CD-425 FLEXIBLE BOARD (SIDE B)



Printed wiring boards of the TY-15, PD-174 and DD-182 boards are not shown.
Pages from 4-39 to 4-44 are not shown.

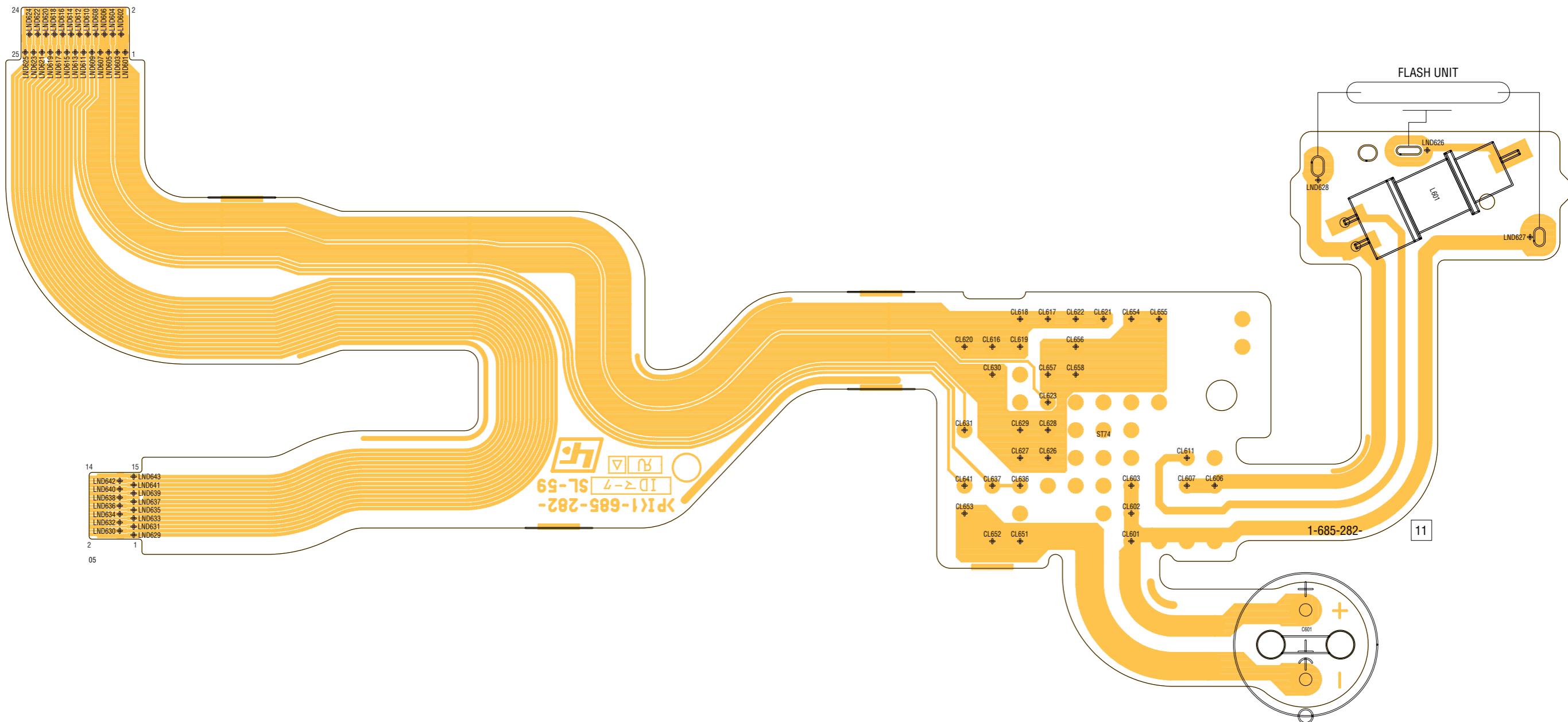


SL-59 FLEXIBLE (CHARGING CAPACITOR, FLASH UNIT)

For Printed Wiring Board.

-  : Uses unleaded solder.
- There are a few cases that the part isn't mounted in this model is printed on this diagram.

SL-59 FLEXIBLE BOARD



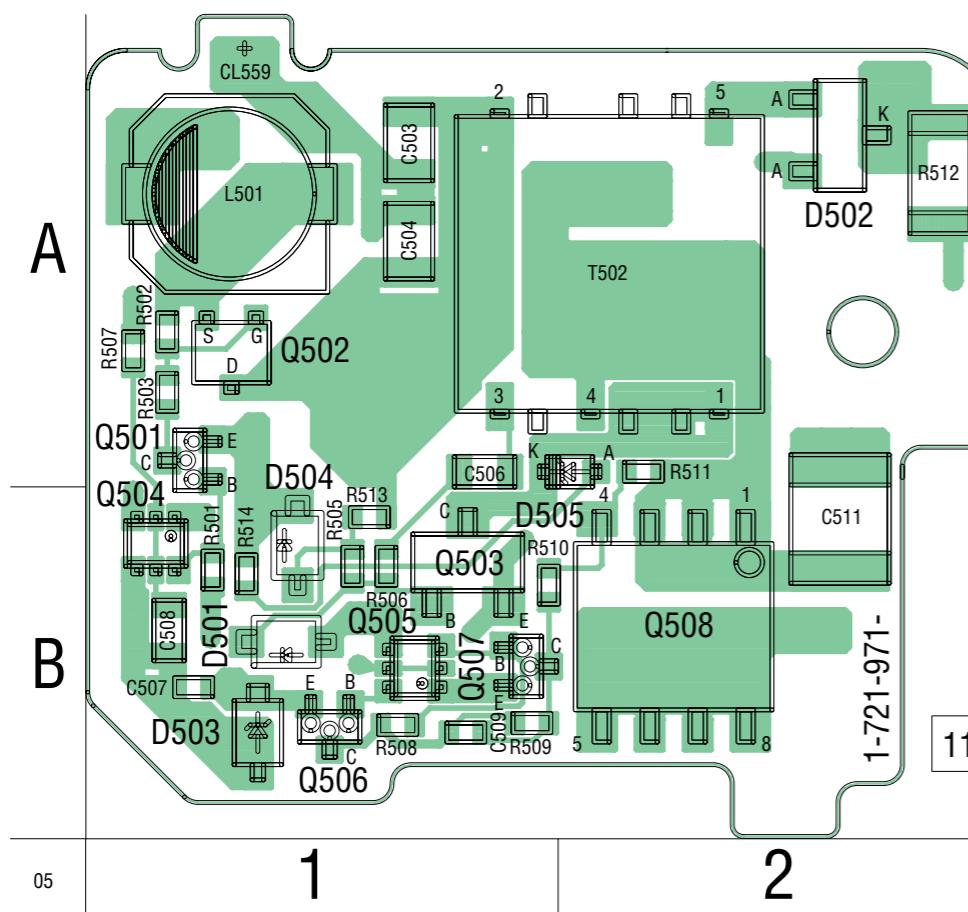


ST-79 (FLASH DRIVE)

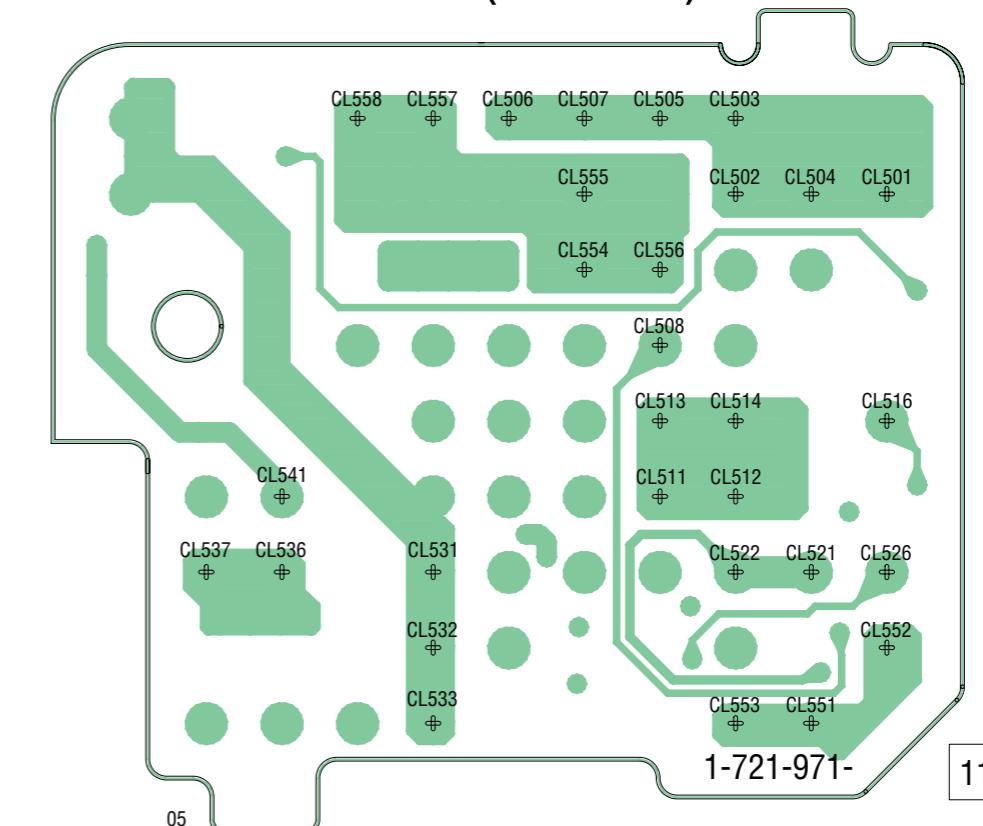
For Printed Wiring Board.

- :Uses unleaded solder.
- ST-79 board is 4-layer print board. However, the pattern of layers 2 to 3 have not been included in the diagram.
- There are a few cases that the part isn't mounted in this model is printed on this diagram.
- See page 4-63 for printed parts location.

ST-79 BOARD (SIDE A)



ST-79 BOARD (SIDE B)



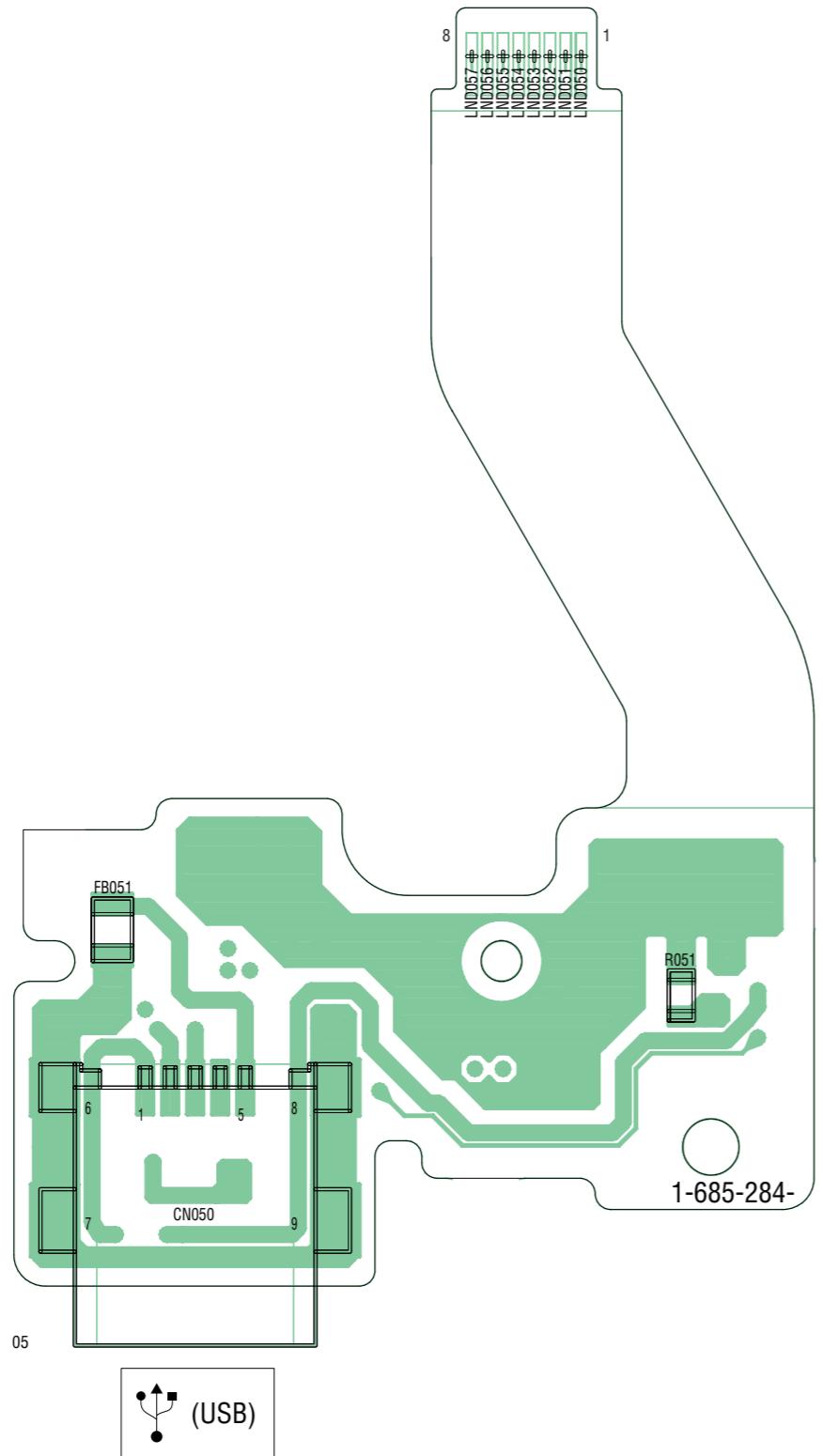


US-4 FLEXIBLE (USB CONNECTOR)

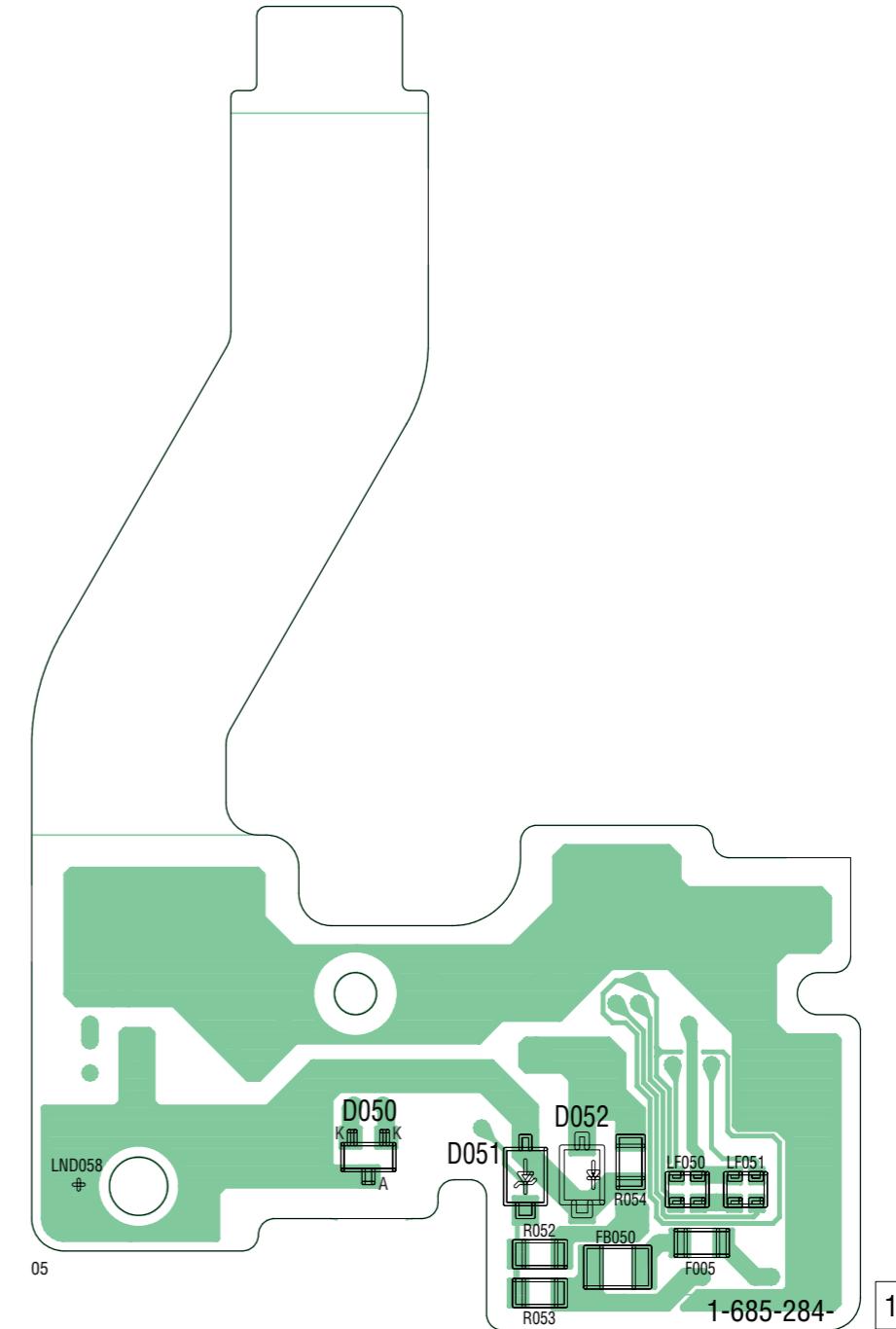
For Printed Wiring Board.

-  :Uses unleaded solder.
- US-4 FLEXIBLE board is 3-layer print board. However, the pattern of layer 2 have not been included in the diagram.
- There are a few cases that the part isn't mounted in this model is printed on this diagram.

US-4 FLEXIBLE BOARD (SIDE A)



US-4 FLEXIBLE BOARD (SIDE B)



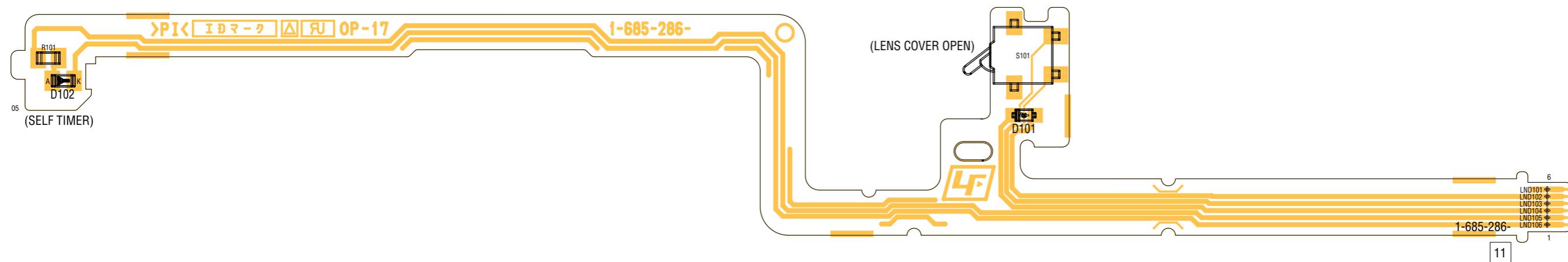


OP-17 FLEXIBLE (LENS COVER DETECT)

For Printed Wiring Board.

- :Uses unleaded solder.
- There are a few cases that the part isn't mounted in this model is printed on this diagram.

OP-17 FLEXIBLE BOARD

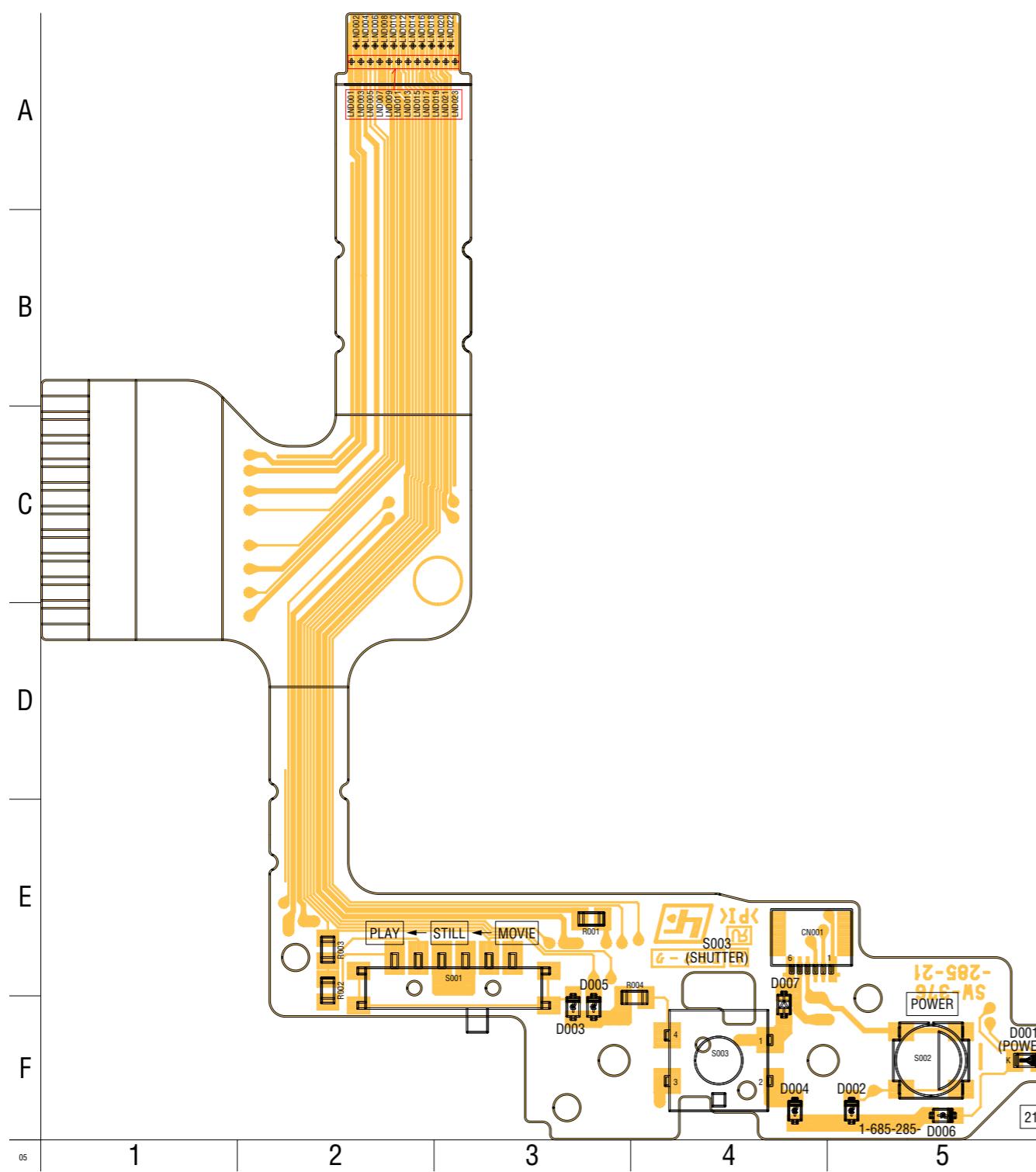


SW-376 FLEXIBLE (CONTROL SWITCH, MS CONNECTOR)

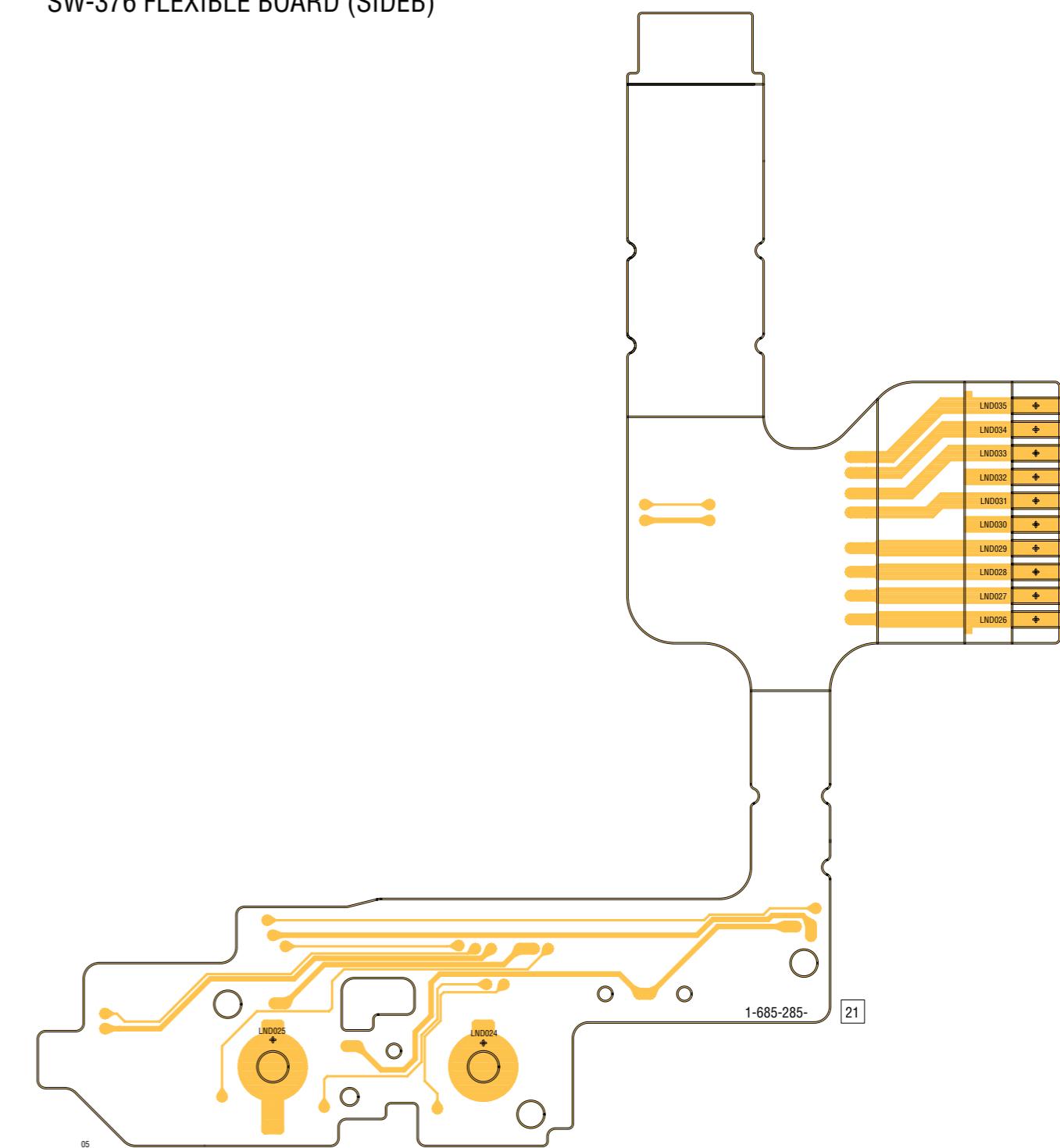
For Printed Wiring Board.

-  : Uses unleaded solder.
- There are a few cases that the part isn't mounted in this model is printed on this diagram.
- See page 4-63 for printed parts location.

SW-376 FLEXIBLE BOARD (SIDE A)



SW-376 FLEXIBLE BOARD (SIDEB)

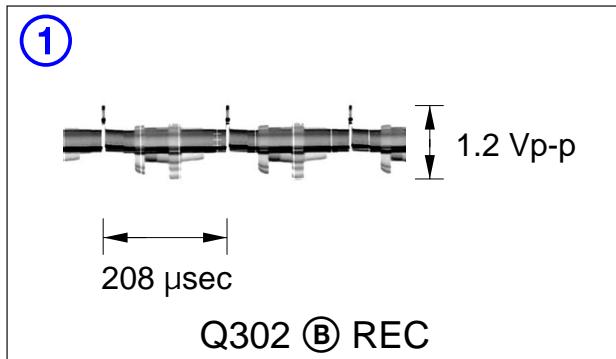


COVER

CD-425 FLEXIBLE BOARD

4-4. WAVEFORMS

CD-425 FLEXIBLE BOARD



Waveforms of the TY-15 and PD-174 boards are not shown.
Pages 4-58 and 4-59 are not shown.

4-5. MOUNTED PARTS LOCATION

no mark : side A
* mark : side B

CD-425 FLEXIBLE BOARD

C301 C-1
C302 B-1
C303 C-1
C305 C-1
C306 C-1
C307 C-1
C309 C-1
C310 C-1
C313 C-1
C314 C-1
C315 C-1

D301 C-1

FB301 C-1

IC101 A-1
* IC302 C-1

L301 B-1

Q302 C-2

R301 C-1
R302 C-1
R303 C-2
R304 C-2
R306 C-1
R307 C-2
R308 C-2
R309 C-2
R310 C-2
R311 B-1

Mounted parts location of the TY-15, PD-174 and DD-182
boards are not shown.
Pages 4-61 and 4-62 are not shown.

COVER

4-3. PRINTED WIRING BOARDS

ST-79 BOARD

C503	A-1	CN001	E-4
C504	A-1		
C506	A-2	D001	F-5
C507	B-1	D002	F-5
C508	B-1	D003	F-3
C509	B-1	D004	F-4
C511	B-2	D005	F-3
		D006	F-5
D501	B-1	D007	E-4
D502	A-2		
D505	A-1	R001	E-3
		R002	E-2
L501	A-1	R003	E-2
		R004	F-4
Q501	A-1		
Q502	A-1	S001	E-3
Q503	B-1	S002	F-5
Q504	B-1	S003	F-4
Q505	B-1		
Q506	B-1		
Q507	B-1		
Q508	B-2		
R501	B-1		
R502	A-1		
R503	A-1		
R505	B-1		
R506	B-1		
R507	A-1		
R508	B-1		
R509	B-1		
R510	B-1		
R511	A-2		
R512	A-2		
R513	B-1		
R514	B-1		
T501	A-2		

SW-376 FLEXIBLE BOARD



5. REPAIR PARTS LIST

NOTE:

- XX, -X mean standardized parts, so they may have some differences from the original one.
- Color Indication of Appearance Parts
Example:
KNOB, BALANCE (WHITE) . . . (RED)

↑	↑
Parts Color	Cabinet's Color
- Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Accessories are given in the last of the electrical parts list.
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- CAPACITORS:
uF: μ F
- COILS
uH: μ H
- RESISTORS
All resistors are in ohms.
METAL: metal-film resistor
METAL OXIDE: Metal Oxide-film resistor
F: nonflammable
- SEMICONDUCTORS
In each case, u: μ , for example:
uA...: μ A..., uPA..., μ PA...,
uPB..., μ PB..., uPC..., μ PC...,
uPD..., μ PD...
- Abbreviation
 - AUS : Australian model
 - CH : Chinese model
 - CND : Canaidan model
 - HK : Hong Kong model
 - KR : Korea model
 - JE : Tourist model
 - J : Japanese model

When indicating parts by reference number, please include the board name.

The components identified by mark  or dotted line with mark are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque  sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

COVER

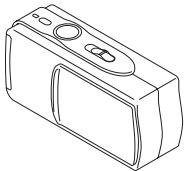
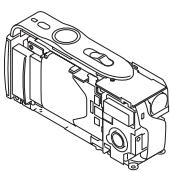
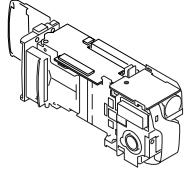
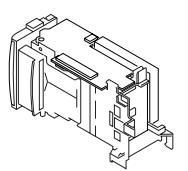
NOTE

5. REPAIR PARTS LIST

NOTE: Characters **A** to **Z** of the electrical parts list indicate location of exploded views in which the desired part is shown.

Link

EXPLODED VIEWS

**A****CABINET SECTION****B****CABINET (UPPER) AND BOTTOM SECTION****C****STROBOSCOPE AND LENS SECTION****D****BATTERY HOLDER AND LCD SECTION**

Link

ELECTRICAL PARTS LIST

ACCESSORIES

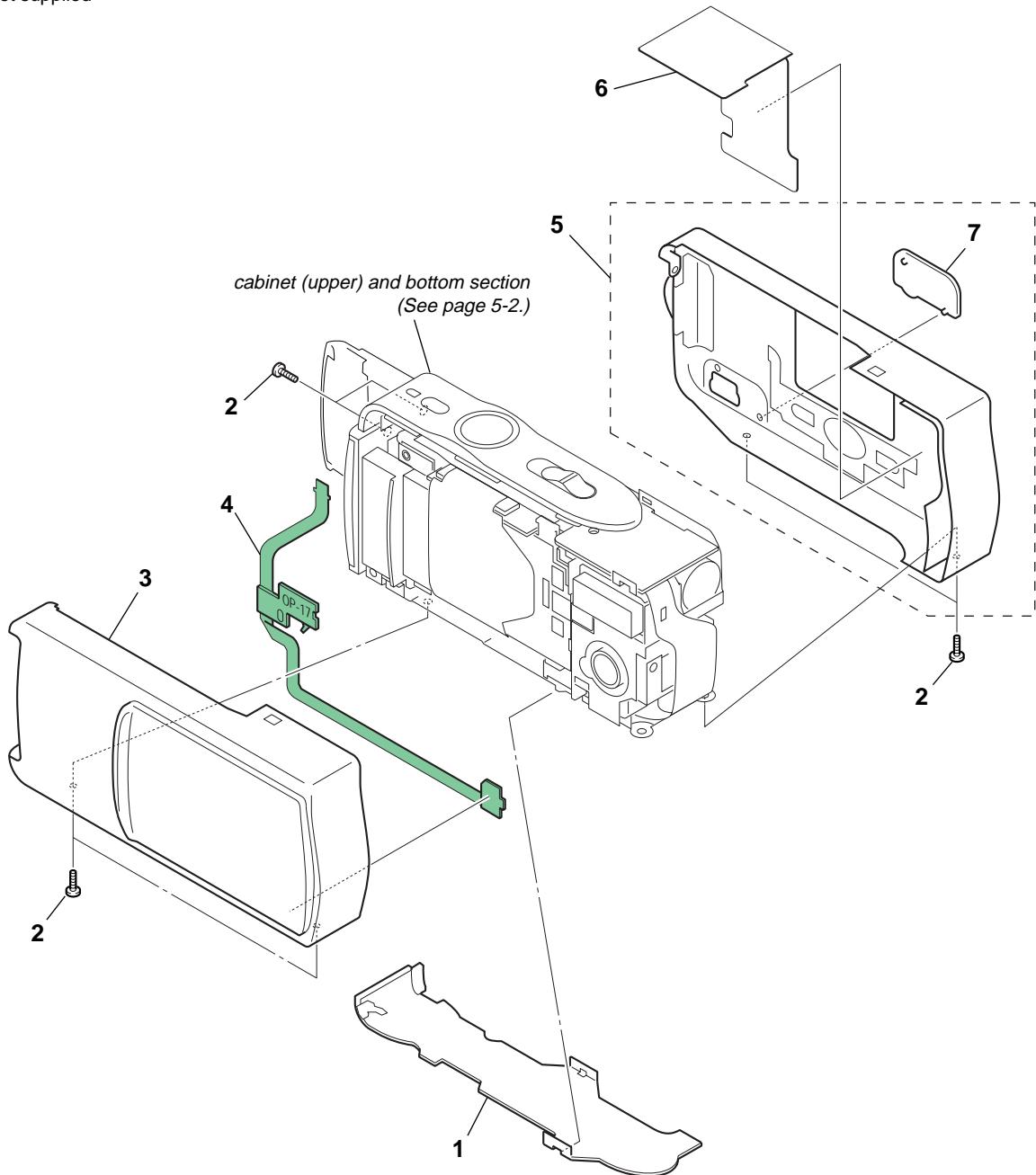
CD-425 FLEXIBLE BOARD**OP-17 FLEXIBLE BOARD****SL-59 FLEXIBLE BOARD****C****A****C****ST-79 BOARD****SW-376 FLEXIBLE BOARD****US-4 FLEXIBLE BOARD****B****D**



5-1. EXPLODED VIEWS

5-1-1. CABINET SECTION

ns: not supplied



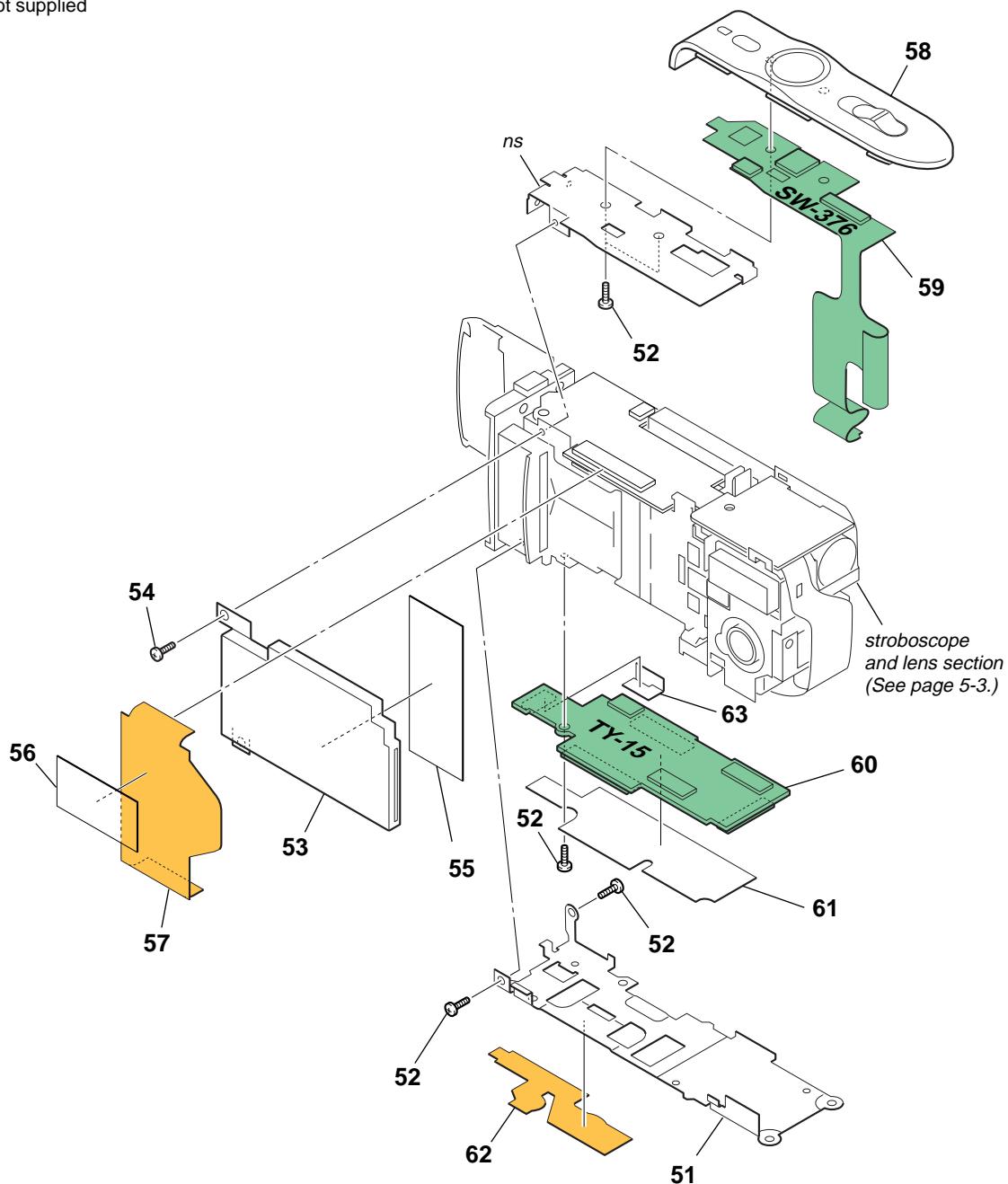
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	X-3952-895-1	CABINET (BOTTOM) ASSY		5	X-3953-059-1	CABINET (REAR) ASSY (K) (SILVER)	
2	3-389-523-22	SCREW (LOCK ACE) (SILVER)		5	X-3953-062-1	CABINET (REAR) ASSY (K) (BLACK)	
2	3-389-523-23	SCREW (LOCK ACE) (BLACK, BLUE)		5	X-3953-064-1	CABINET (REAR) ASSY (K) (BLUE)	
3	X-3953-058-2	CABINET (FRONT) ASSY (K) (SILVER)		6	3-076-931-01	LABEL, FUSE REPLACEMENT CAUTION	
3	X-3953-061-1	CABINET (FRONT) ASSY (K) (BLACK)		7	3-076-539-01	COVER, USB (SILVER)	
3	X-3953-063-1	CABINET (FRONT) ASSY (K) (BLUE)		7	3-076-539-11	COVER, USB (BLACK, BLUE)	
4	A-7078-313-A	OP-17 FLEXIBLE BOARD, COMPLETE					

COVER

5. REPAIR PARTS LIST

5-1-2. CABINET (UPPER) AND BOTTOM SECTION

ns: not supplied



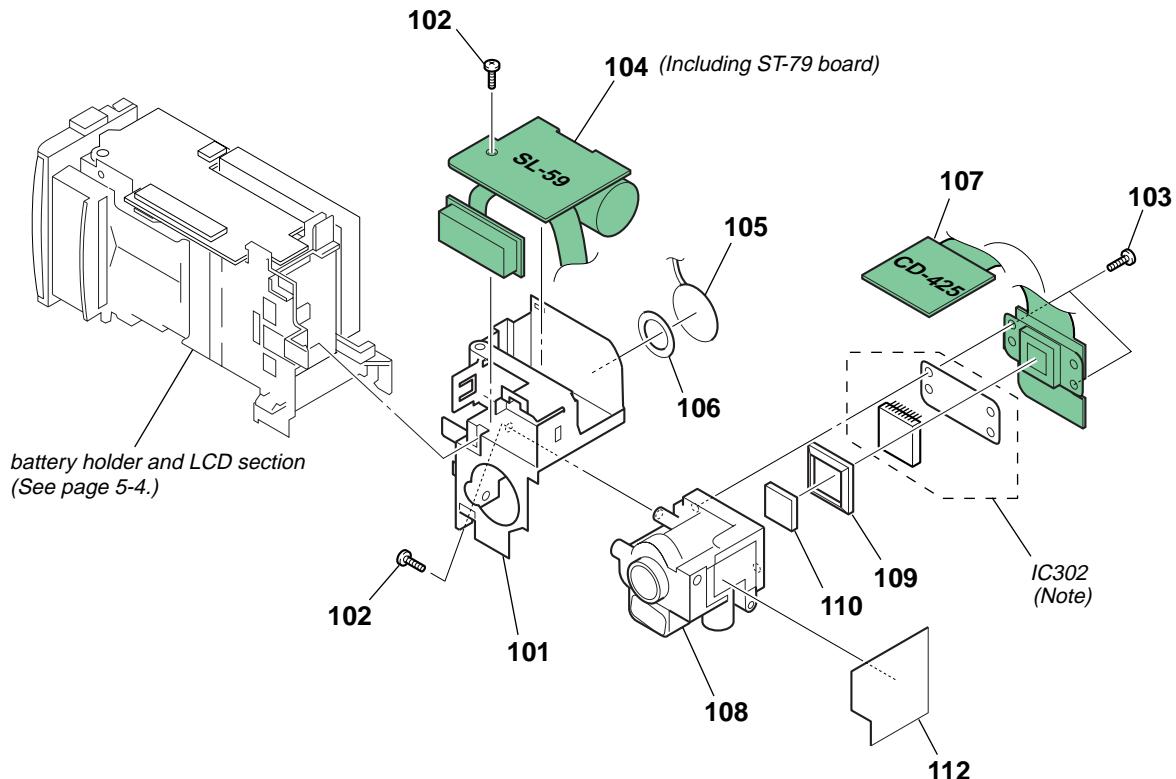
The components identified by mark \triangle or dotted line with mark \triangle are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque \triangle sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
51	3-076-477-03	FRAME, BOTTOM		58	X-3952-894-1	CABINET (UPPER) ASSY	
52	3-713-791-05	SCREW (M1.7)		59	A-7078-493-A	SW-376 FLEXIBLE BOARD, COMPLETE	
53	1-815-853-13	CONNECTOR, MEMORY STICK		60	A-7078-519-A	TY-15 BOARD, COMPLETE (SERVICE)	
54	3-389-523-22	SCREW (LOCK ACE)		61	3-076-481-02	SHEET (TY), INSULATING	
55	3-061-335-01	SHEET (SW), PROTECTION		\triangle 62	1-685-287-12	RS-85 FLEXIBLE BOARD\	
56	3-060-104-01	SHEET, LENS		63	3-076-970-01	SHEET (USB)	
57	1-685-288-11	FP-532 FLEXIBLE BOARD					

5-1-3. STROBOSCOPE AND LENS SECTION

ns: not supplied



(Note) Be sure to read "Precautions for Replacement of CCD Imager" on page 4-8 when changing the CCD imager.

The components identified by mark \triangle or dotted line with mark \triangle are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque \triangle sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

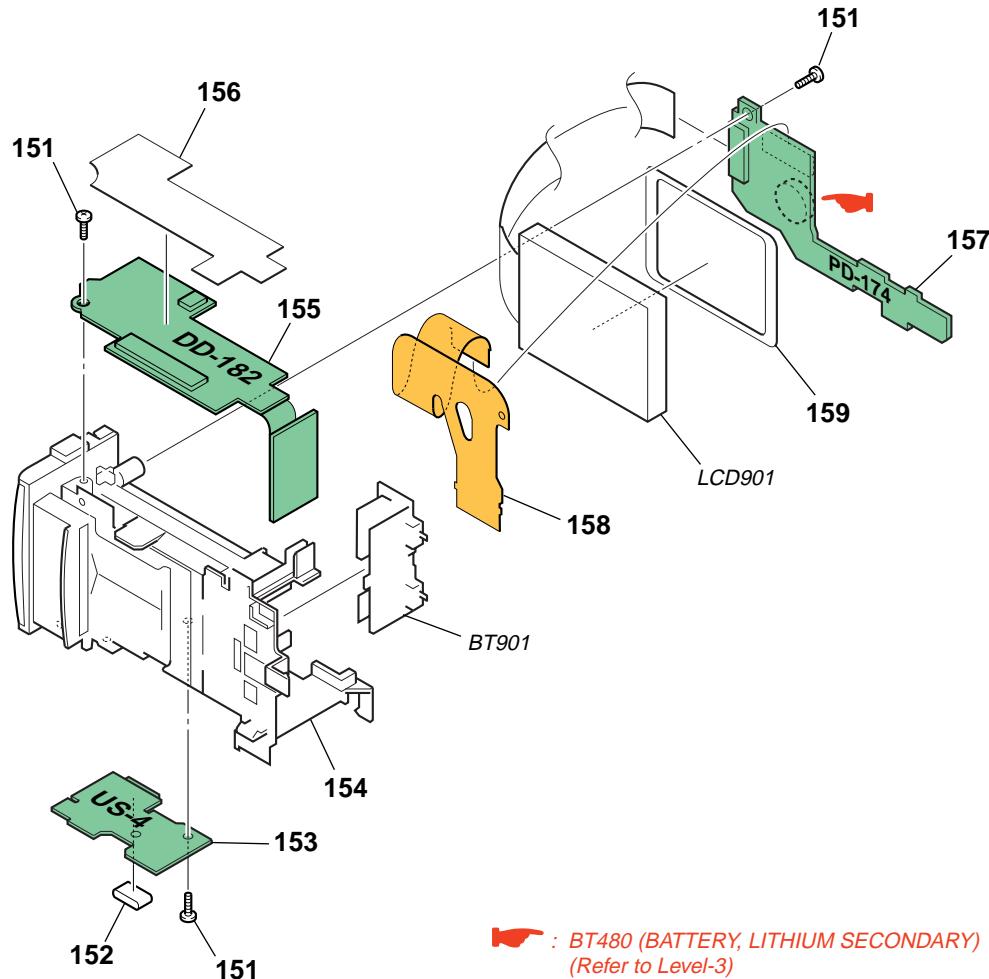
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
101	3-076-487-01	FRAME, STROBOSCOPE		107	A-7078-503-A	CD-425 FLEXIBLE BOARD, COMPLETE	
102	3-713-791-05	SCREW (M1.7)		108	8-848-757-01	LSV-780A	
103	3-713-791-41	SCREW (M1.7X5), TAPPING, P2		109	3-074-038-01	RUBBER (MM), CCD SEAL	
\triangle 104	A-7078-517-A	SL-59 FLEXIBLE BOARD, COMPLETE (Including ST-79 board)		110	1-758-742-11	FILTER BLOCK, OPTICAL	
105	1-825-273-11	BUZZER, (DIA.15mm), VOLTAGE		112	3-077-970-01	SHEET (SL), PROTECTION	
106	3-076-489-01	SHEET (BUZZER), ADHESIVE		IC302	A-7031-378-A	CCD BLOCK ASSY (CCD IMAGER) (NOTE)	

COVER

5. REPAIR PARTS LIST

5-1-4. BATTERY HOLDER AND LCD SECTION

ns: not supplied



BT480 (BATTERY, LITHIUM SECONDARY)
(Refer to Level-3)

The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
151	3-713-791-05	SCREW (M1.7)	
152	3-077-086-01	CUSHION (USB), GROUND	
153	A-7078-316-A	US-4 FLEXIBLE BOARD, COMPLETE	
154	X-3953-066-1	HOLDER ASSY, (K) BT (SILVER)	
154	X-3953-067-1	HOLDER ASSY, (K) BT (BLACK)	
154	X-3953-068-1	HOLDER ASSY, (K) BT (BLUE)	
155	A-7078-310-A	DD-182 BOARD, COMPLETE	

Ref. No.	Part No.	Description	Remark
156	3-076-480-01	SHEET (DD), INSULATING	
157	A-7078-309-A	PD-174 BOARD, COMPLETE	
158	1-685-289-11	FP-533 FLEXIBLE BOARD	
159	3-076-476-01	CUSHION (LCD)	
BT901	1-694-918-11	BATTERY TERMINAL BOARD	
Δ LCD901	8-753-051-78	ACX711AKM-2	

CD-425 FLEXIBLE

5-2. ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description
----------	----------	-------------

A-7078-503-A	CD-425 FLEXIBLE BOARD, COMPLETE
--------------	---------------------------------

(IC302 is not included in this complete board)
(Including IC101 (CH-124))

< CAPACITOR >

C301	1-115-340-11	CERAMIC CHIP	0.22uF	10%	25V
C302	1-113-984-11	TANTAL. CHIP	1.5uF	20%	35V
C303	1-100-116-11	TANTAL. CHIP	10uF	20%	16V
C305	1-115-340-11	CERAMIC CHIP	0.22uF	10%	25V
C306	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C307	1-164-939-11	CERAMIC CHIP	0.0022uF	10%	50V
C309	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C310	1-107-820-11	CERAMIC CHIP	0.1uF		16V
C313	1-164-943-11	CERAMIC CHIP	0.01uF	10%	16V
C314	1-100-116-11	TANTAL. CHIP	10uF	20%	16V
C315	1-113-984-11	TANTAL. CHIP	1.5uF	20%	35V

< DIODE >

D301	8-719-073-01	DIODE	MA111- (K8).S0
------	--------------	-------	----------------

< FERRITE BEAD >

FB301	1-414-228-11	FERRITE	0uH
-------	--------------	---------	-----

< IC >

IC101	not supplied	CH-124 BOARD, COMPLETE
IC302	A-7031-378-A	CCD BLOCK ASSY (Note)

< COIL >

L301	1-469-561-21	INDUCTOR	100uH
------	--------------	----------	-------

< TRANSISTOR >

Q302	8-729-050-22	TRANSISTOR	2SC4250 (T5LSONY1)
------	--------------	------------	--------------------

< RESISTOR >

R301	1-218-977-11	RES-CHIP	100K	5%	1/16W
R302	1-218-990-11	SHORT CHIP	0		
R303	1-218-990-11	SHORT CHIP	0		
R304	1-218-990-11	SHORT CHIP	0		
R306	1-218-990-11	SHORT CHIP	0		
R307	1-218-960-11	RES-CHIP	3.9K	5%	1/16W
R308	1-218-962-11	RES-CHIP	5.6K	5%	1/16W
R311	1-218-990-11	SHORT CHIP	0		

Electrical parts list of the DD-182 board is not shown.

Pages 5-7 and 5-8 are not shown.

(Note) Be sure to read "Note on the CCD Imager Replacement" on page 4-8 when changing the CCD imager.

Ref. No. Part No. Description

A-7078-313-A OP-17 FLEXIBLE BOARD, COMPLETE

< DIODE >

D101 8-719-056-53 DIODE MAZS051008SO
D102 8-719-074-30 DIODE CL-190UR-CD-T (SELF TIMER)

< RESISTOR >

R101 1-216-819-11 METAL CHIP 680 5% 1/16W

< SWITCH >

S101 1-786-179-11 SWITCH, PUSH (1KEY) (LENS COVER OPEN)

Electrical parts list of the PD-174 board is
not shown.

Page 5-10 is not shown.

SL-59 FLEXIBLE

ST-79

SW-376 FLEXIBLE

Ref. No.	Part No.	Description				
▲	A-7078-517-A	SL-59 FLEXIBLE BOARD, COMPLETE ***** (Including ST-79 board)				
▲	1-477-336-11	FLASH UNIT < CAPACITOR >				
▲C601	1-100-019-11	ELECT	42uF	99%	330V	
		< COIL >				
▲L601	1-424-770-11	COIL, TRIGGER ST-79 BOARD, COMPLETE (Not supplied) ***** (Included SL-59 flexible board)				
		< CAPACITOR >				
C503	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V	
C504	1-137-710-11	CERAMIC CHIP	10uF	20%	6.3V	
C506	1-127-715-91	CERAMIC CHIP	0.22uF	10%	16V	
C507	1-125-777-11	CERAMIC CHIP	0.1uF	10%	10V	
C508	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V	
C509	1-119-923-81	CERAMIC CHIP	0.047uF	10%	10V	
C511	1-137-723-21	CERAMIC CHIP	0.047uF	10%	250V	
		< DIODE >				
D501	8-719-073-01	DIODE	MA111- (K8).SO			
▲D502	6-500-237-01	DIODE	HAU160C030TP			
		< COIL >				
L501	1-419-627-21	INDUCTOR	10uH			
		< TRANSISTOR >				
▲Q501	8-729-052-64	TRANSISTOR	DTC144EHT2L			
▲Q502	8-729-055-89	TRANSISTOR	MCH3306-TL-E			
▲Q503	6-550-308-01	TRANSISTOR	CPH3205-SONY-TL-E			
▲Q504	8-729-053-57	TRANSISTOR	RN1902FE (TPLR3)			
▲Q505	8-729-053-57	TRANSISTOR	RN1902FE (TPLR3)			
▲Q506	8-729-052-55	TRANSISTOR	DTA114EHT2L			
▲Q507	8-729-042-28	TRANSISTOR	2SD2216J-QR (K8).SO			
▲Q508	8-729-053-74	TRANSISTOR	CY25AAJ-8-T13			
		< RESISTOR >				
R501	1-218-961-11	RES-CHIP	4.7K	5%	1/16W	
R502	1-218-977-11	RES-CHIP	100K	5%	1/16W	
R503	1-218-965-11	RES-CHIP	10K	5%	1/16W	
R505	1-218-990-11	SHORT CHIP	0			
R506	1-218-949-11	RES-CHIP	470	5%	1/16W	
R507	1-218-961-11	RES-CHIP	4.7K	5%	1/16W	
R508	1-218-953-11	RES-CHIP	1K	5%	1/16W	
R509	1-218-943-11	RES-CHIP	150	5%	1/16W	
R510	1-218-937-11	RES-CHIP	47	5%	1/16W	
R511	1-218-989-11	RES-CHIP	1M	5%	1/16W	
R512	1-216-286-00	RES-CHIP	4.7M	5%	1/8W	
R513	1-218-957-11	RES-CHIP	2.2K	5%	1/16W	
R514	1-218-990-11	SHORT CHIP	0			

Ref. No.	Part No.	Description				
		< TRANSFORMER >				
▲T502	1-437-987-21	TRANSFORMER, CONVERTER A-7078-493-A SW-376 BOARD, COMPLETE *****				
		< CONNECTOR >				
CN001	1-816-654-11	FFC/FPC CONNECTOR (LIF) 6P < DIODE >				
D001	8-719-053-07	DIODE	SML-310MTT86			
D002	8-719-056-53	DIODE	MAZS051008SO			
D003	8-719-056-53	DIODE	MAZS051008SO			
D004	8-719-056-53	DIODE	MAZS051008SO			
D005	8-719-056-53	DIODE	MAZS051008SO			
D006	8-719-056-53	DIODE	MAZS051008SO			
D007	8-719-056-23	DIODE	MA2S111- (K8).SO			
		< RESISTOR >				
R001	1-216-817-11	METAL CHIP	470	5%	1/16W	
R002	1-218-851-11	METAL CHIP	1.5K	0.5%	1/10W	
R003	1-218-847-11	METAL CHIP	1K	0.5%	1/10W	
R004	1-216-864-11	METAL CHIP	0	5%	1/16W	
		< SWITCH >				
S001	1-762-648-21	SWITCH, SLIDE (PLAY/STILL/MOVIE)				
▲S002	1-786-157-21	SWITCH, TACTILE (POWER)				
S003	1-786-370-11	TACTILE SWITCH (SHUTTER)				

Electrical parts list of the TY-15 board is not shown.
Pages 5-12 to 5-14 are not shown.

The components identified by mark ▲ or dotted line with mark ▲ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque ▲ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
	A-7078-316-A	US-4 FLEXIBLE BOARD, COMPLETE *****
		< CONNECTOR >
CN050	1-816-112-11	CONNECTOR, SQUARE TYPE (USB) 5P (USB)
		< DIODE >
D050	8-719-075-15	DIODE MAZT082H08S0
D051	8-719-073-03	DIODE MA8082- (K8).S0
		< FUSE >
△F005	1-576-646-11	FUSE (0.5A/50V)
		< FERRITE BEAD >
△FB050	1-469-350-21	FERRITE 0uH
		< LINE FILTER >
LF050	1-400-252-11	INDUCTOR 0uH
LF051	1-400-252-11	INDUCTOR 0uH
		< RESISTOR >
R052	1-216-845-11	METAL CHIP 100K 5% 1/16W
R053	1-216-851-11	METAL CHIP 330K 5% 1/16W
R054	1-216-864-11	METAL CHIP 0 5% 1/16W

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
	3-078-812-51	OPERATING INSTRUCTIONS (TRADITIONAL CHINESE, SIMPLIFIED CHINESE) (E, HK, CH, JE)
	3-078-812-61	OPERATING INSTRUCTIONS (SWEDISH, RUSSIAN) (AEP)
	3-078-812-71	OPERATING INSTRUCTIONS (ARABIC) (E)
	3-080-088-11	OPERATING INSTRUCTIONS (KOREAN) (KR)
	3-076-620-01	STRAP, NECK
	3-077-012-02	SPVD008-I (51100) (USB DRIVER) (US, CND, J)
	3-077-023-02	SPVD008 (51100) (USB DRIVER) (AEP, UK, E, HK, AUS, CH, JE, KR)

ACCESSORIES

△	1-477-227-12	CHARGER, BATTERY (BC-CS1) (J)
△	1-477-227-22	CHARGER, BATTERY (BC-CS1) (US, CND)
△	1-477-227-33	CHARGER, BATTERY (BC-CS1) (AEP, UK, E, AUS, HK, JE)
△	1-477-227-42	CHARGER, BATTERY (BC-CS1) (KR)
△	1-477-227-52	CHARGER, BATTERY (BC-CS1) (CH)
△	1-569-007-11	ADAPTOR, CONVERSION (E, JE)
△	1-569-008-12	ADAPTOR, CONVERSION 2P (E)
△	1-696-819-11	CORD, POWER (AUS)
△	1-769-608-11	CORD, POWER (AEP, E)
△	1-782-476-11	CORD, POWER (CH)
△	1-783-374-11	CORD, POWER (UK, HK)
△	1-790-107-22	CORD, POWER (US, CND)
△	1-776-985-11	CORD, POWER (KR)
△	1-790-732-11	CORD, POWER (JE, J)
	1-823-932-11	CORD, CONNECTION (USB 5P)
	3-065-665-05	MANUAL, INSTRUCTION (JAPANESE) (J)
	3-076-474-01	CASE, AAA BATTERY
	3-078-812-01	OPERATING INSTRUCTIONS (JAPANESE) (J)
	3-078-812-11	OPERATING INSTRUCTIONS (ENGLISH) (US, CND, AEP, UK, E, AUS, CH, HK, JE)
	3-078-812-21	OPERATING INSTRUCTIONS (FRENCH, GERMAN) (CND, AEP)
	3-078-812-31	OPERATING INSTRUCTIONS (SPANISH, PORTUGUESE) (AEP, E, JE)
	3-078-812-41	OPERATING INSTRUCTIONS (DUTCH, ITALIAN) (AEP)

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ver 1.0 2002.10
Revision History

SECTION 6 ADJUSTMENTS

ADJ

Link

- Before starting adjustments

- Adjusting items when replacing main parts and boards

- CAMERA SECTION ADJUSTMENTS

- PREPARATIONS BEFORE ADJUSTMENTS

- INITIALIZATION OF 2F, 4F, 6F PAGE DATA

- CAMERA SYSTEM ADJUSTMENTS

- LCD SYSTEM ADJUSTMENTS

- SERVICE MODE

- APPLICATION FOR ADJUSTMENT (SEUS)

- DATA PROCESS

- SERVICE MODE

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2. DISASSEMBLY	○	×
3. BLOCK DIAGRAMS	OVERALL POWER	×
4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS	CD-425 FLEXIBLE, SL-59 FLEXIBLE, ST-79, US-4 FLEXIBLE, OP-17 FLEXIBLE, SW-376 FLEXIBLE, RS-85 FLEXIBLE, FP-532 FLEXIBLE, FP-533 FLEXIBLE	TY-15, PD-174, DD-182 BOARD
5. REPAIR PARTS LIST	EXPLODED VIEWS ELECTRICAL PARTS	×
		○ (DD-182, PD-174, TY-15 BOARD)

SONY®

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1-1. Adjusting items when replacing main parts and boards

When replacing main parts and boards, adjust the items indicated by ● in the following table.

		Replaced parts																			
		Block replacement		Mounted parts replacement		Board replacement															
		Lens block assy	Flash unit	LCD block	LCD901 (LCD panel)	CD-425 board	IC302 (CCD imager)	TY-15 board	IC602 (Camera DSP)	PD-174 board	IC401 (LCD drive)	CD-425 board	(COMPLETE)	TY-15 board	(COMPLETE)	SL-59 flexible board	(COMPLETE)	PD-174 board	(COMPLETE)	TY-15 board	IC604 EEPROM
Initialization of 2F, 4F, 6F, page data	Initialization of 2F, 4F, 6F page data													●						●	
Camera	Hall adj.	●												●						●	
	Flange back adj.	●						●						●						●	
	F No. compensation	●						●						●						●	
	Mechanical shutter adj.	●						●						●						●	
	Light value adj.	●						●						●						●	
	Mixed color cancel data input & check	●						●						●						●	
	AWB 3200K standard data input	●						●						●						●	
	AWB 5800K standard data input	●						●						●						●	
	Color reproduction data input & check	●						●						●						●	
	CCD linearity check	●						●		●				●						●	
LCD	Strobe adj.		●		●									●		●	●			●	
	LCD initial data input													●						●	
	VG center adj.							●						●						●	
	Bright adj.							●						●						●	
	Contrast adj.							●						●						●	
	PSIG adj.							●						●						●	
	V-COM adj.							●						●						●	
	White balance adj.							●						●						●	

Table 6-1-1

COVER

6-1. CAMERA SECTION ADJUSTMENTS

1-1. PREPARATIONS BEFORE ADJUSTMENTS

1-1-1. List of Service Tools

- Calculating machine capable of calculating hexadecimal numbers.

Ref. No.	Name	Parts Code	Usage
J-1	Filter for color temperature correction (C14)	J-6080-058-A	Auto white balance adjustment/check White balance adjustment/check
J-2	Pattern box PTB-450	J-6082-200-A	
J-3	Color bar chart for pattern box	J-6020-250-A	
J-4	Clear chart for pattern box	J-6080-621-A	
J-5	Parsonal computer		OS: Windows 98/98SE/Me/2000/XP Home/XP Pro USB connector × 2
J-6	USB cable	1-823-932-11	For connecting the camera to PC
J-7	HASP key and application for adjustment (SEUS)		Contact our service headquarter of each area how to get the application for adjustment (SEUS) and HASP key
J-8	Background paper	J-2501-130-A	For adjusting the strobe

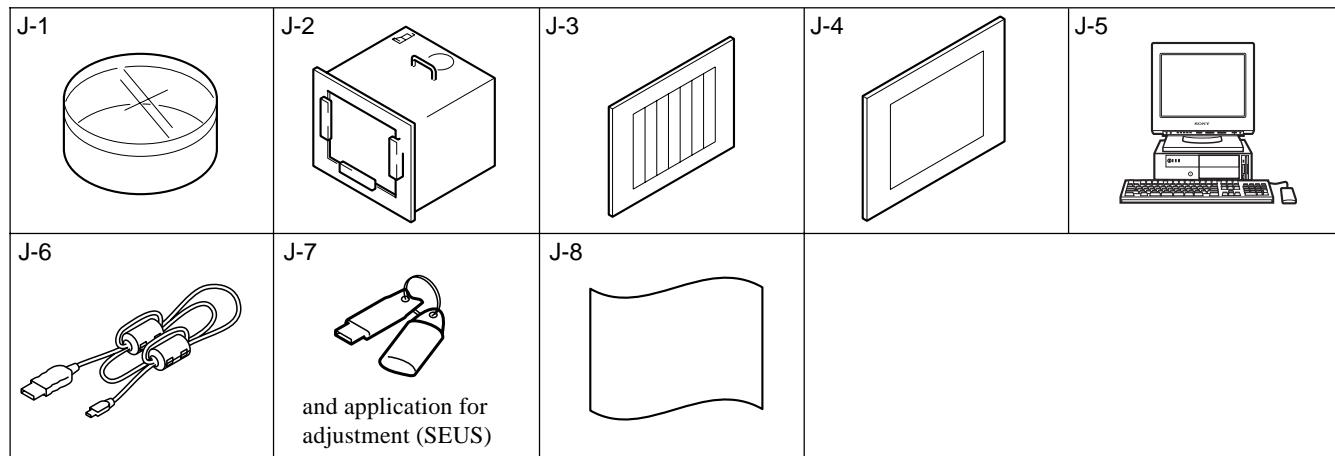


Fig. 6-1-1

1-1-2. Preparations

- 1) Connect the equipment for adjustments according to Fig. 6-1-3.
- 2) Start up the application for adjustment (SEUS).

Note 1: Setting the “Forced CAMERA mode power ON Mode”

- 1) Select page: 00, address: 01, and set data: 01.
- 2) Select page: 2F, address: 11, and write data: E0.
- 3) Select page: 2F, address: 12, and write data: BC.
- 4) Select page: 20, address: 00, and set data: 29.
- 5) Select page: 20, address: 01, and write data: 29.

At this time, the set is reset and the power is turned off once and then on again. Accordingly, the message “Receive Packet Error” is displayed on the SEUS screen, and the SEUS goes in “disconnect” state, but this is not a trouble. Click **Connect** on the SEUS screen to restore the “connected” state.

- 6) Select page: 00, address: 01, and set data: 01.
- 7) Select page: 2F, address: 21, and write data: 02.

The above procedure will enable the camera power to be turned on. After completing adjustments, be sure to exit the “Forced CAMERA mode power ON Mode”.

Note 2: Exiting the “Forced CAMERA mode power ON Mode”

- 1) Select page: 00, address: 01, and set data: 01.
- 2) Select page: 2F, address: 21, and write data: 00.
- 3) Select page: 2F, address: 12, and write data: 2C.
- 4) Select page: 2F, address: 11, and write data: 60.
- 5) Select page: 00, address: 01, and set data: 00.

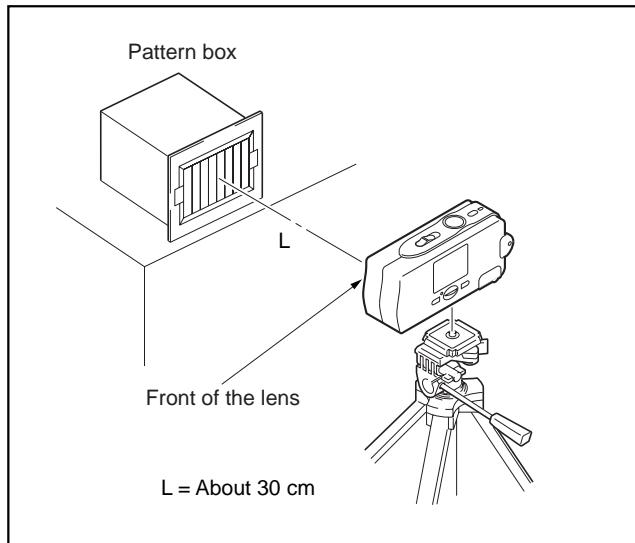


Fig. 6-1-2

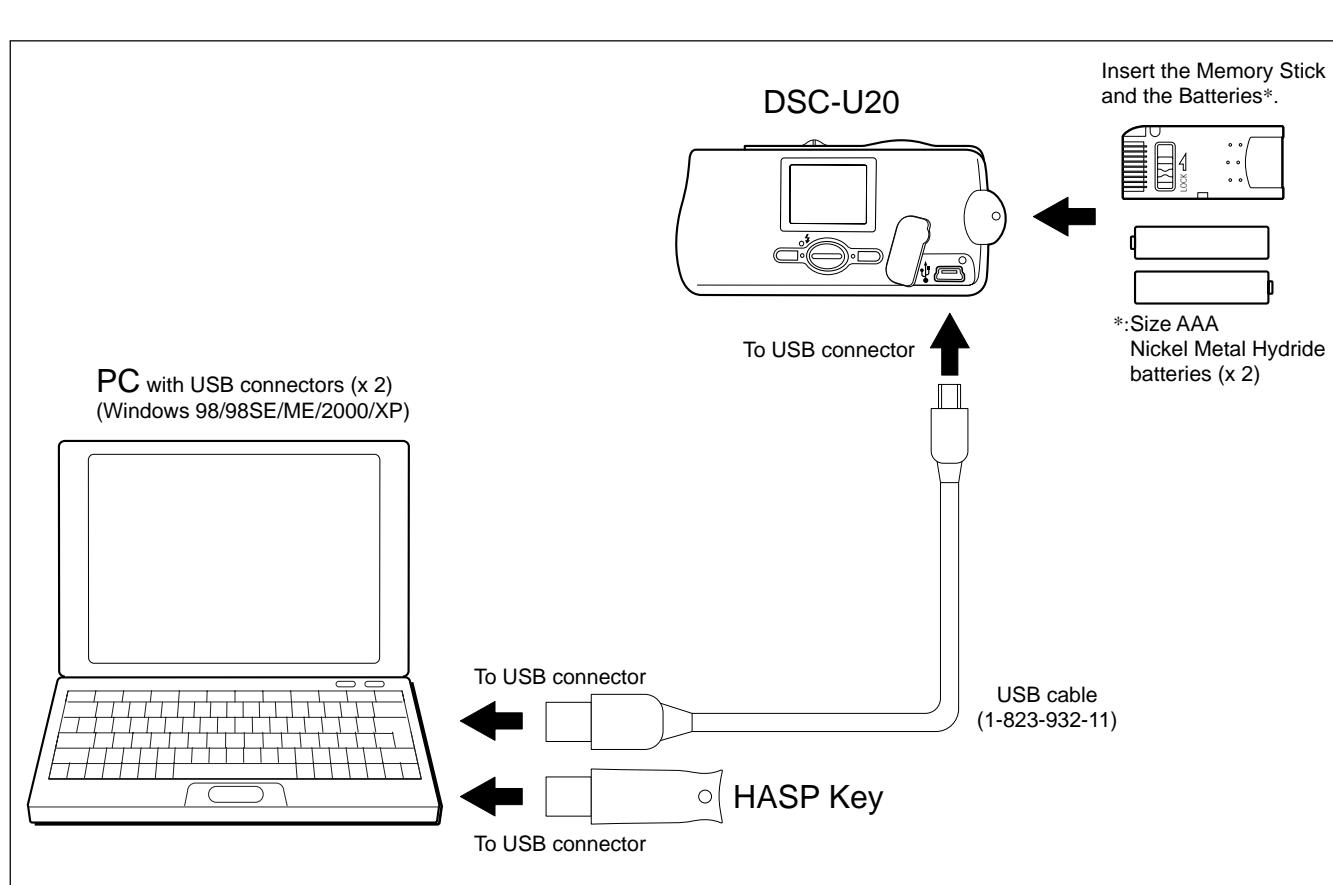


Fig. 6-1-3

1-1-3. Precautions

1. Setting the Switch

Unless otherwise specified, set the switches as follows and perform adjustments.

1. FOCUS (Menu setting) AUTO
2. P.EFFECT (Menu setting) OFF
3. USB (Menu setting) NORMAL

2. Order of Adjustments

Basically carry out adjustments in the order given.

3. Subjects

- 1) Color bar chart (Standard picture frame).

When performing adjustments using the color bar chart, adjust the picture frame as shown in Fig. 6-1-4. (Standard picture frame)

- 2) Clear chart (Standard picture frame)

Remove the color bar chart from the pattern box and insert a clear chart in its place.

- 3) Chart for flange back adjustment

Join together a piece of white A0 size paper (1189mm × 841 mm) and a piece of black paper to make the chart shown in Fig. 6-1-5.

Note: Use a non-reflecting and non-glazing vellum paper. The size must be A0 or larger and the joint between the white and black paper must not have any undulations.

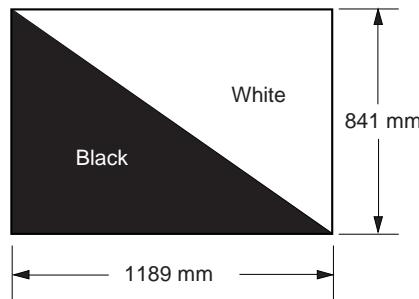


Fig. 6-1-5

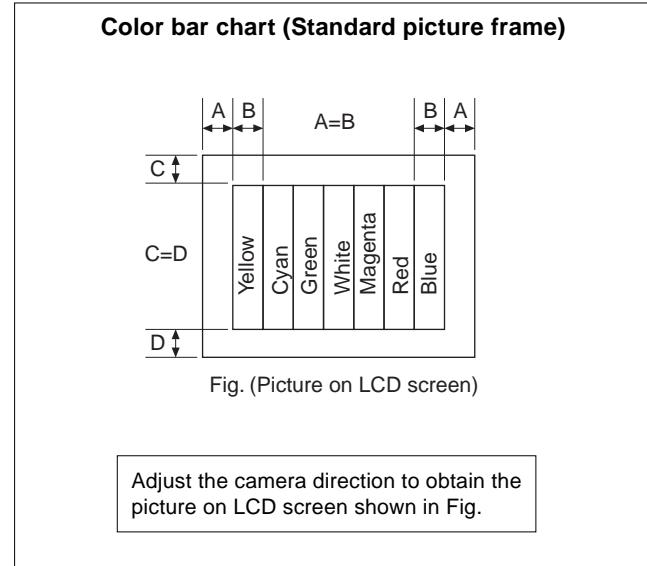
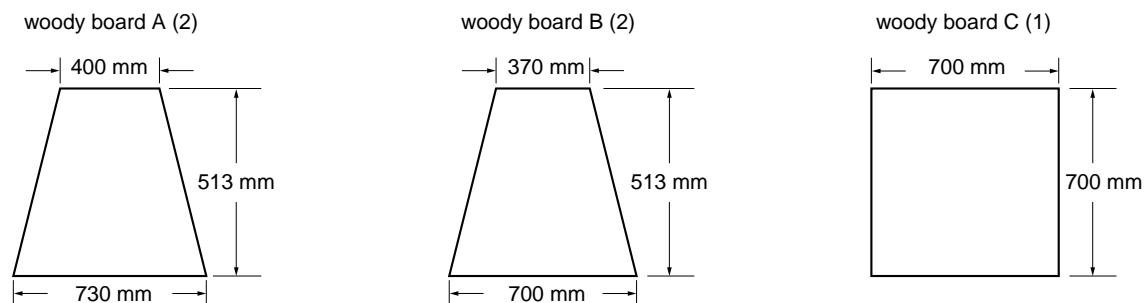


Fig. 6-1-4

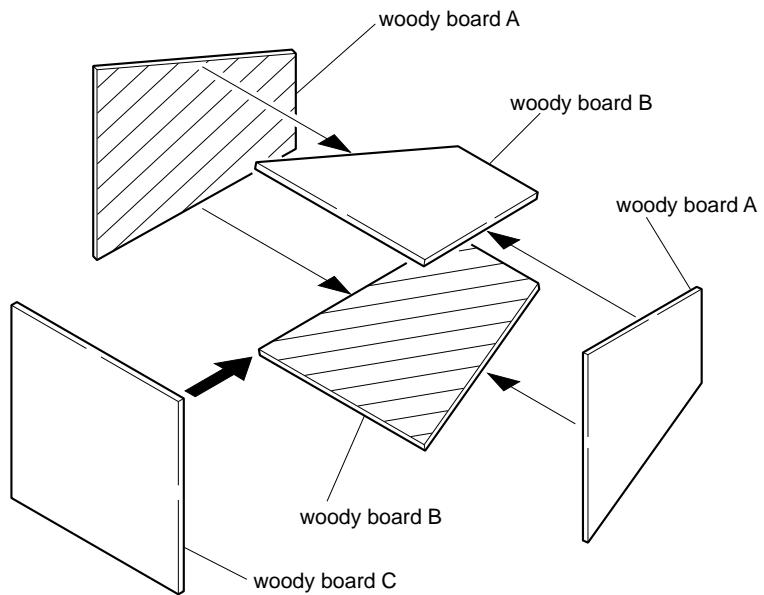
4. Preparing the Flash Adjustment Box

A dark room is required to provide an accurate flash adjustment. If it is not available, prepare the flash adjustment box as given below:

- 1) Provide woody board A, B and C of 15 mm thickness.

**Fig. 6-1-6**

- 2) Apply black mat paint to one side of woody board A and B.
- 3) Attach background paper (J-2501-130-A) to woody board C.
- 4) Assemble so that the black sides and the background paper side of woody board A, B and C are internal. (Fig. 6-1-7)

**Fig. 6-1-7**

COVER

1-2. INITIALIZATION OF 2F, 4F, 6F PAGE DATA

1-2-1. Initialization of 2F, 4F, 6F Page Data

1. Initializing of 2F, 4F, 6F Page Data

Note 1: Initialize the data every page of 2F, 4F, and 6F.

Note 2: If the 4F page data has been initialized, the following adjustments need to be performed again.

- 1) LCD system adjustments

Note 3: If the 6F page data has been initialized, the following adjustments need to be performed again.

- 1) Camera system adjustments

Adjusting Page	2F
Adjusting Address	10 to 73
Adjusting Page	4F
Adjusting Address	00 to FF
Adjusting Page	6F
Adjusting Address	00 to FF

Initializing Method:

- 1) Click **Page Edit** on the SEUS screen to display the SEUS PAGE EDIT screen.
- 2) Click **Page**, and then enter the page to be initialized.
- 3) Click **Preset Data Read** to display the Set ID input screen.
- 4) Enter Set ID = "3" and read the initializing data on the SEUS PAGE EDIT screen.
- 5) On the SEUS PAGE EDIT screen, change the data at "Fixed data-2" address given in the table on the page to be initialized.

Note: New data for change are not listed in the table. If the data are to be changed, read and copy the data from the same model. Copying the data from different models may cause an operation failure.

- 6) Confirm that the data at respective adjustment addresses are the initial values (adjustment initial values) given in the table. If different, change to the adjustment initial values.
- 7) Click **Write** to write the initializing data to the set.
- 8) Click **Close** to close the SEUS PAGE EDIT screen.

Processing after Completing Initializing

Order	Page	Address	Data	Procedure
1	6F	00	20 Write	
2	20	00	29 set	
3	20	01	29 Write	(Note)

Note: At this time, the set is reset and the power is turns off once and then on again. Accordingly, the message "Receive Packet Error" is displayed on the SEUS screen, and the SEUS goes in "disconnect" state, but this is not a trouble. Click **Connect** on the SEUS screen to restore the "connected" state.

2. 2F Page table

Note 1: Fixed data-1: Initialized data.

(Refer to step 4 of "1. Initializing of 2F, 4F, 6F Page Data")

Note 2: Fixed data-2: Modified data.

(Refer to step 5 of "1. Initializing of 2F, 4F, 6F Page Data")

Address	Initial value	Remark
10 to 20		Fixed data-1 (Initialized data)
21	00	Test mode
22 to 73		Fixed data-1 (Initialized data)

3. 4F Page table

Note 1: Fixed data-1: Initialized data.

(Refer to step 4 of "1. Initializing of 2F, 4F, 6F Page Data")

Note 2: Fixed data-2: Modified data.

(Refer to step 5 of "1. Initializing of 2F, 4F, 6F Page Data")

Address	Initial value	Remark
00 to 1F		Fixed data-1 (Initialized data)
20		Fixed data-2
21 to 81		Fixed data-1 (Initialized data)
82	95	V-COM adj. (LCD)
83	BF	Bright adj. (LCD)
84		Fixed data-1 (Initialized data)
85	38	PSIG adj. (LCD)
86	8C	White balance adj. (LCD)
87	80	
88	5A	Contrast adj. (LCD)
89	33	VG center adj. (LCD)
8A		Fixed data-2
8B to FF		Fixed data-1 (Initialized data)

4. 6F Page table

Note 1: Fixed data-1: Initialized data.

(Refer to step 4 of “1. Initializing of 2F, 4F, 6F Page Data”)

Note 2: Fixed data-2: Modified data.

(Refer to step 5 of “1. Initializing of 2F, 4F, 6F Page Data”)

Address	Initial value	Remark
00 to 0F		Fixed data-1 (Initialized data)
10	10	Flange back check
11	00	
12	10	
13	00	
14	00	
15	FF	
16, 17		Fixed data-1 (Initialized data)
18	10	Flange back adj.
19	00	
1A	10	
1B	00	
1C	10	
1D	1D	
1E, 1F		Fixed data-1 (Initialized data)
20	00	Flange back adj.
21	00	
22	00	
23	00	
24	20	
25	20	
26	00	
27	02	
28	02	
29	00	
2A	00	
2B	00	
2C to 3D		Fixed data-1 (Initialized data)
3E	FF	Flange back adj.
3F to 51		Fixed data-1 (Initialized data)
52	00	Flange back adj.
53	00	
54 to 57		Fixed data-1 (Initialized data)
58	44	Hall adj.
59	A9	
5A	15	
5B	5B	
5C	79	
5D	5D	
5E	13	F No. compensation
5F	42	
60	08	
61	00	

Address	Initial value	Remark
62	00	F No. compensation
63	00	
64	00	
65	3E	Light value adj.
66	00	
67	A3	
68	10	Hall adj.
69 to 6F		Fixed data-1 (Initialized data)
70	2F	AWB 3200K standard data input
71	81	
72	1F	
73	81	
74	2F	
75 to 7B		Fixed data-1 (Initialized data)
7C	1D	AWB 5800K standard data input
7D	01	
7E	31	
7F	01	
80 to 87		Fixed data-1 (Initialized data)
88	00	CCD linearity check
89	00	
8A	00	
8B	00	
8C	00	
8D	00	
8E	00	
8F	00	
90 to 99		Fixed data-1 (Initialized data)
9A	00	CCD linearity check
9B	00	
9C to 9F		Fixed data-1 (Initialized data)
A0	2A	AWB 5800K standard data input
A1	00	
A2	60	
A3	00	
A4	F4	
A5	F1	
A6	6A	Color reproduction data input & check
A7	88	
A8	FC	
A9	FF	
AA	7A	
AB	6C	
AC to AF		Fixed data-1 (Initialized data)
B0	00	Mixed color cancel data input & check
B1	00	
B2	00	
B3	00	AWB 3200K standard data input
		AWB 5800K standard data input

6F Page table

Address	Initial value	Remark
B4	00	AWB 3200K standard data input
B5		Fixed data-1 (Initialized data)
B6	28	Strobe adj.
B7	6E	
B8	09	
B9	39	
BA	06	
BB	6A	
BC	06	
BD	03	
BE	00	
BF	00	
C0	00	
C1	00	
C2	00	
C3	00	Mechanical shutter adj.
C4	00	
C5	00	
C6	00	
C7	44	
C8	5B	
C9	69	
CA	00	
CB	00	
CC	80	
CD	88	
CE	98	
CF	90	
D0	88	
D1	00	Strobe adj.
D2	00	
D3	00	
D4	00	
D5	00	
D6	00	
D7	14	
D8 to D9		Fixed data-1 (Initialized data)
DA	00	
DB	00	
DC	00	
DD	00	
DE	00	
DF	00	
E0	00	
E1	00	
E2	00	
E3	00	
E4	00	

Address	Initial value	Remark
E5	00	
E6	00	
E7	00	
E8	00	
E9	00	
EA	00	Strobe adj.
EB	00	
EC	00	
ED	00	
EE	00	
EF	00	
F0 to FF		Fixed data-1 (Initialized data)



1-3. CAMERA SYSTEM ADJUSTMENTS

Data Setting During Camera System Adjustments

Perform the following data setting before the camera system adjustments.

It is not necessary to perform the following data setting every time when you perform some item of camera system adjustment continuously unless the power is turned off. Only when the power is turned off during this adjustments, perform the data setting again, then continue the adjustment.

Data setting method:

Order	Page	Address	Data	Procedure
1	00	01	01 Set	
2	2F	11	E0 Write	
3	2F	12	BC Write	
4	20	00	29 set	
5	20	01	29 Write	(Note)
6	00	01	01 Set	
7	2F	21	02 Write	
8	60	E1	Read	Check the data changes to “02”.
9	4F	02	0C Write	

Note: At this time, the set is reset and the power is turns off once and then on again. Accordingly, the message “Receive Packet Error” is displayed on the SEUS screen, and the SEUS goes in “disconnect” state, but this is not a trouble. Click **Connect** on the SEUS screen to restore the “connected” state.

After completing the camera system adjustments, release the data setting:

- 1) Click **Page Edit** on the SEUS screen to display the SEUS PAGE EDIT screen.
- 2) Click **Page**, and then enter the page “0E”.
- 3) Click **Preset Data Read** to display the Set ID input screen.
- 4) Enter Set ID = “3” and read the initializing data on the SEUS PAGE EDIT screen.
- 5) Check that all the data is “FF”.
- 6) Click **Write** to write the initializing data to the set.
- 7) Click **Close** to close the SEUS PAGE EDIT screen.
- 8) Release the data setting which has been executed before adjustment.

Order	Page	Address	Data	Procedure
1	4F	02	00 Write	
2	2F	21	00 Write	
3	2F	12	2C Write	
4	2F	11	60 Write	
5	00	01	00 Set	

Picture Frame Setting

Mode	CAMERA
Subject	Color bar chart (Standard picture frame) (30 cm from the front of lens)
Measurement Point	Picture on LCD screen
Specified value	A=B, C=D

Setting method:

Order	Procedure
1	Adjust the camera direction, and set the specified position.
2	Adjust the picture frame to this position in following adjustment using “Standard picture frame”.

Check on LCD screen

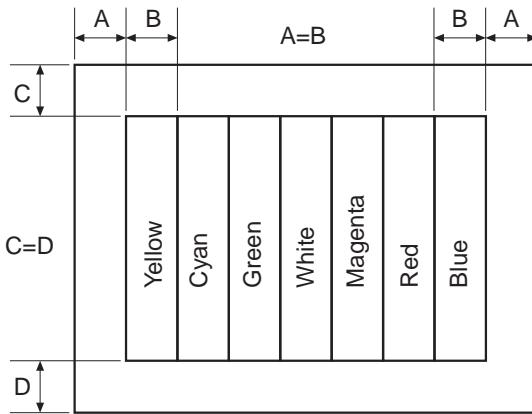


Fig. 6-1-8

1. HALL Adjustment

For detecting the position of lens iris, adjust the hall AMP gain and offset.

Mode	CAMERA
Subject	Not required
Measurement Point	Data of page: 10, address: 06
Adjustment Page	6F
Adjustment Address	58 to 5D and 68
Specified value 1	12 to 1A
Specified value 2	80 to 88

Note 1: Check that the data of page: 60, address: 02 is “00”. If not, press the RESET switch at the bottom of the set using a thin and long pin.

Adjusting method:

Order	Page	Address	Data	Procedure
1				Perform “Data setting during camera system adjustment” (Refer to page 6-10)
2	60	94	16 Write	
3	60	95	84 Write	
4	60	01	6D Write	(Note 2)
5	60	02	Read	Check the data changes to “01”.
6	60	01	00 Write	

Note 2: The adjustment data will be automatically input to page: 6F, address: 58 to 5D and 68.

Checking method:

Order	Page	Address	Data	Procedure
1	60	01	01 Write	
2	10	06	Read	Check that the data satisfied the specified value 1.
3	60	01	00 Write	
4	60	01	03 Write	
5	10	06	Read	Check that the data satisfied the specified value 2.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	60	01	00 Write	
2	60	94	00 Write	
3	60	95	00 Write	
4				Release “Data setting during camera system adjustment” (Refer to page 6-10)

2. Flange Back Adjustment

The inner focus lens flange back adjustment is carried out automatically. In whichever case, the focus will be deviated during auto focusing/manual focusing.

Preparations before adjustments:

- 1) Check that the center of Flange back adjustment chart meets the center of shot image screen.

2-1. Flange Back Adjustment

Mode	CAMERA
Subject	Flange back adjustment chart (2.0 m from the front of lens) (Luminance: 300 to 400 lux)
Measurement Point	Data of page: 6F, address: 24 and 3E
Adjustment Page	6F
Adjustment Address	18 to 1D, 20 to 2B, 3E, 52 and 53
Specified value 1	00
Specified value 2	0A to 7F

Note 1: Check that the data of page: 60, address: 02 is “00”. If not, press the RESET switch at the bottom of the set using a thin and long pin.

Adjusting method:

Order	Page	Address	Data	Procedure
1				Perform “Data setting during camera system adjustment” (Refer to page 6-10)
2	60	01	13 Write	
3	60	01	15 Write	(Note 2)
4	60	02	Read	Check the data changes to “01”.
5	6F	3E	Read	Check that the data satisfied the specified value 1.
6	6F	24	Read	Check that the data satisfied the specified value 2.

Note 2: The adjustment data will be automatically input to page: 6F, address: 18 to 1D, 20 to 2B, 3E, 52 and 53.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	60	01	00 Write	
2	20	00	29 Set	
3	20	01	29 Write	(Note 3)
4				Wait for 4 seconds.
5				Perform “Flange Back Check”.

Note 3: At this time, the set is reset and the power is turned off once and then on again. Accordingly, the message “Receive Packet Error” is displayed on the SEUS screen, and the SEUS goes into “disconnect” state, but this is not a trouble. Click **Connect** on the SEUS screen to restore the “connected” state.

2-2. Flange Back Check

Mode	CAMERA
Subject	Flange back adjustment chart (2.0 m from the front of lens) (Luminance: 300 to 400 lux)
Measurement Point	Data of page: 6F, address: 15
Adjustment Page	6F
Adjustment Address	10 to 15
Specified value	00

Note 1: Check that the data of page: 60, address: 02 is “00”. If not, press the RESET switch at the bottom of the set using a thin and long pin.

Checking method:

Order	Page	Address	Data	Procedure
1				“Flange Back Adjustment” is completed.
2	00	01	01 Set	
3	60	01	DD Write	(Note 2)
4	60	02	Read	Check the data changes to “01”.
5	6F	15	Read	Check that the data satisfied the specified value.

Note 2: The adjustment data will be automatically input to page: 6F, address: 10 to 15.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	60	01	00 Write	
2				Release “Data setting during camera system adjustment” (Refer to page 6-10)

3. F No. Compensation

Adjust the dispersion of the lens iris every F number, and compensate the exposure.

Mode	CAMERA
Subject	Clear chart (Standard picture frame)
Adjustment Page	6F
Adjustment Address	5E to 64

Note 1: Check that the data of page: 60, address: 02 is “00”. If not, press the RESET switch at the bottom of the set using a thin and long pin.

Adjusting method:

Order	Page	Address	Data	Procedure
1				Perform “Data setting during camera system adjustment” (Refer to page 6-10)
2				Perform “Picture frame setting” (Refer to page 6-10)
3	60	01	BB Write	(Note 2)
4	60	02	Read	Check the data changes to “01”.

Note 2: The adjustment data will be automatically input to page: 6F, address: 5E to 64.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	60	01	00 Write	
2				Release “Data setting during camera system adjustment” (Refer to page 6-10)

4. Mechanical Shutter Adjustment

Adjust the close time and loss time every F number of mechanical shutter, and compensate the exposure.

Mode	CAMERA
Subject	Clear chart (Standard picture frame)
Measurement Point	Data of page: 60, address: AB
Adjustment Page	6F
Adjustment Address	B8 to D7
Specified value	00

Note 1: Check that the data of page: 60, address: 02 is “00”. If not, press the RESET switch at the bottom of the set using a thin and long pin.

Adjusting method:

Order	Page	Address	Data	Procedure
1				Perform “Data setting during camera system adjustment” (Refer to page 6-10)
2				Perform “Picture frame setting” (Refer to page 6-10)
3	60	01	AD Write	(Note 2)
4	60	02	Read	Check the data changes to “01”.
5	60	AB	Read	Check that the data satisfied the specified value.

Note 2: The adjustment data will be automatically input to page: 6F, address: B8 to D7.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	60	01	00 Write	
2				Release “Data setting during camera system adjustment” (Refer to page 6-10)

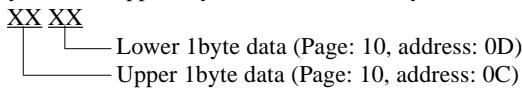
5. Light Value Adjustment

Adjust the standard light value.

Mode	CAMERA
Subject	Clear chart (Standard picture frame)
Measurement Point	Data of page: 10, address: 0C and 0D (2byte data) (Note 2) Data of page: 6F, address: 65
Adjustment Page	6F
Adjustment Address	65 to 67
Specified value 1	0FE0 to 1020
Specified value 2	38 to 48

Note 1: Check that the data of page: 60, address: 02 is “00”. If not, press the RESET switch at the bottom of the set using a thin and long pin.

Note 2: 2byte data is upper 1byte data and lower 1byte data.



Adjusting method:

Order	Page	Address	Data	Procedure
1				Perform “Data setting during camera system adjustment” (Refer to page 6-10)
2				Perform “Picture frame setting” (Refer to page 6-10)
3	60	01	0D Write	(Note 3)
4	60	02	Read	Check the data changes to “01”.
5	10	0C	Read	Read the data (Upper 1byte).
6	10	0D	Read	Read the data (Lower 1byte).
7				Check that the 2byte data (Note 2) satisfied the specified value 1.
8	6F	65	Read	Check that the data satisfied the specified value 2.

Note 3: The adjustment data will be automatically input to page: 6F, address: 65 to 67.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	60	01	00 Write	
2				Release “Data setting during camera system adjustment” (Refer to page 6-10)

6. Mixed Color Cancel Data Input & Check

Correct the dispersion of Gr/Gb filter on CCD imager

Mode	CAMERA
Subject	Color bar chart (Standard picture frame)
Adjustment Page	6F
Adjustment Address	B0 and B1

Input method:

Order	Page	Address	Data	Procedure
1	00	01	01 Set	
2	6F	B0	00 Write	
3	6F	B1	32 Write	
4	00	01	00 Set	

Checking method:

Order	Procedure
1	Shoot the color bar chart.
2	Capture the shot picture into the PC, and display the picture on the PC screen.
3	Confirm that no line (horizontal streak) is present in blue, red and magenta portions of the picture of color bar chart displayed.

7. AWB 3200K Standard Data Input

Adjust the white balance reference at 3200K.

Mode	CAMERA
Subject	Clear chart (Standard picture frame)
Adjustment Page	6F
Adjustment Address	70 to 74, B2 and B4

Note 1: Check that the data of page: 60, address: 02 is “00”. If not, press the RESET switch at the bottom of the set using a thin and long pin.

Adjusting method:

Order	Page	Address	Data	Procedure
1				Perform “Data setting during camera system adjustment” (Refer to page 6-10)
2				Perform “Picture frame setting” (Refer to page 6-10)
3	60	37	02 Set	
4	60	01	0B Write	(Note 2)
5	60	02	Read	Check the data changes to “01”.

Note 2: The adjustment data will be automatically input to page: 6F, address: 70 to 74, B2 and B4.

Processing after Completing Adjustment:

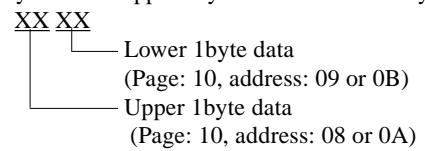
Order	Page	Address	Data	Procedure
1	60	01	00 Write	
2	60	37	00 Set	
3				Release “Data setting during camera system adjustment” (Refer to page 6-10)

8. AWB 3200K Check

Mode	CAMERA
Subject	Clear chart (Standard picture frame)
Measurement Point	Data of page: 10, address: 08 and 09 (2byte data) (Note 2) Data of page: 10, address: 0A and 0B (2byte data) (Note 2)
Specified value	3F60 to 40A0

Note 1: Check that the data of page: 60, address: 02 is “00”. If not, press the RESET switch at the bottom of the set using a thin and long pin.

Note 2: 2byte data is upper 1byte data and lower 1byte data.



Checking method:

Order	Page	Address	Data	Procedure
1				Perform “Data setting during camera system adjustment” (Refer to page 6-10)
2				Perform “Picture frame setting” (Refer to page 6-10)
3	60	37	0E Set	
4	60	01	0F Write	
5	60	02	Read	Check the data changes to “01”.
6	10	08	Read	Read the data (Upper 1byte).
7	10	09	Read	Read the data (Lower 1byte).
8				Check that the 2byte data (Note 2) satisfied the specified value.
9	10	0A	Read	Read the data (Upper 1byte).
10	10	0B	Read	Read the data (Lower 1byte).
11				Check that the 2byte data (Note 2) satisfied the specified value.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	60	01	00 Write	
2	60	37	00 Set	
3				Release “Data setting during camera system adjustment” (Refer to page 6-10)

9. AWB 5800K Standard Data Input

Adjust the white balance reference at 5800K.

Mode	CAMERA
Filter	Filter C14 for color temperature correction
Subject	Clear chart (Standard picture frame)
Adjustment Page	6F
Adjustment Address	7C to 7F, A0 to A3 and B3

Note 1: Check that the data of page: 60, address: 02 is “00”. If not, press the RESET switch at the bottom of the set using a thin and long pin.

Adjusting method:

Order	Page	Address	Data	Procedure
1				Place the C14 filter on the lens.
2				Perform “Data setting during camera system adjustment” (Refer to page 6-10)
3				Perform “Picture frame setting” (Refer to page 6-10)
4	6F	A0	28 [Write]	
5	6F	A1	00 [Write]	
6	6F	A2	60 [Write]	
7	6F	A3	00 [Write]	
8	79	6E	[Read]	Note down the data.
9	79	6E	80 [Write]	
10	60	37	08 [Set]	
11	60	01	A5 [Write]	(Note 2)
12	60	02	[Read]	Check the data changes to “01”.

Note 2: The adjustment data will be automatically input to page: 6F, address: 7C to 7F, A0 to A3 and B3.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	60	01	00 [Write]	
2	60	37	00 [Set]	
3	79	6E	[Write]	Write the data noted down at step 8.
4				Release “Data setting during camera system adjustment” (Refer to page 6-10)
5				Remove the C14 filter on the lens.

10. AWB 5800K Check

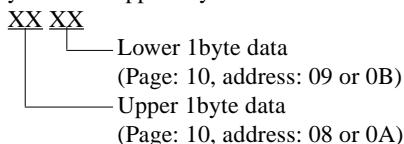
Mode	CAMERA
Filter	Filter C14 for color temperature correction
Subject	Clear chart (Standard picture frame)
Measurement Point	Data of page: 10, address: 08 and 09 (2byte data) (Note 2) Data of page: 10, address: 0A and 0B (2byte data) (Note 2)
Specified value 1	2960 to 2AA0
Specified value 2	5F60 to 60A0

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	60	01	00 [Write]	
2	60	37	00 [Set]	
3	79	6E	[Write]	Write the data noted down at step 4.
4				Release "Data setting during camera system adjustment" (Refer to page 6-10)
5				Remove the C14 filter on the lens.

Note 1: Check that the data of page: 60, address: 02 is "00". If not, press the RESET switch at the bottom of the set using a thin and long pin.

Note 2: 2byte data is upper 1byte data and lower 1byte data.



Checking method:

Order	Page	Address	Data	Procedure
1				Place the C14 filter on the lens.
2				Perform "Data setting during camera system adjustment" (Refer to page 6-10)
3				Perform "Picture frame setting" (Refer to page 6-10)
4	79	6E	[Read]	Note down the data.
5	79	6E	80 [Write]	
6	60	37	14 [Set]	
7	60	01	3F [Write]	
8	60	02	[Read]	Check the data changes to "01".
9	10	08	[Read]	Read the data (Upper 1byte).
10	10	09	[Read]	Read the data (Lower 1byte).
11				Check that the 2byte data (Note 2) satisfied the specified value 1.
12	10	0A	[Read]	Read the data (Upper 1byte).
13	10	0B	[Read]	Read the data (Lower 1byte).
14				Check that the 2byte data (Note 2) satisfied the specified value 2.

11. Color Reproduction Data Input & Check

Adjust the color separation matrix coefficient so that proper color reproduction is produced.

Mode	CAMERA
Subject	Color bar chart (Standard picture frame)
Adjustment Page	6F
Adjustment Address	A4 to AB

Input method:

Order	Page	Address	Data	Procedure
1	00	01	01 Set	
2	6F	A4	F4 Write	
3	6F	A5	F1 Write	
4	6F	A6	6A Write	
5	6F	A7	88 Write	
6	6F	A8	FC Write	
7	6F	A9	FF Write	
8	6F	AA	7A Write	
9	6F	AB	6C Write	
10	00	01	00 Set	

Checking method:

Order	Procedure
1	Shoot the color bar chart.
2	Capture the shot picture into the PC, and display the picture on the PC screen.
3	Confirm that no color is shifted by comparing the displayed color bar chart with real color bar chart.

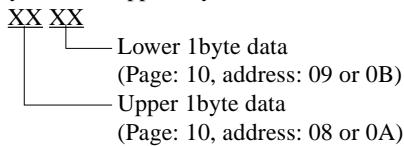
12. CCD Linearity Check

Check that CCD output keeps being straight even ISO sensitivity is changed.

Mode	CAMERA
Subject	Clear chart (Standard picture frame)
Measurement Point	Data of page: 10, address: 08 and 09 (2byte data) (Note 2)
	Data of page: 10, address: 0A and 0B (2byte data) (Note 2)
Adjustment Page	6F
Adjustment Address	88 to 8F, 9A and 9B
Specified value 1	D00 to FFF or 000 to 300
Specified value 2	D00 to FFF or 000 to 300
Specified value 3	D00 to FFF or 000 to 300
Specified value 4	D00 to FFF or 000 to 300
Specified value 5	B00 to FFF or 000 to 500
Specified value 6	B00 to FFF or 000 to 500

Note 1: Check that the data of page: 60, address: 02 is “00”. If not, press the RESET switch at the bottom of the set using a thin and long pin.

Note 2: 2byte data is upper 1byte data and lower 1byte data.



Checking method:

Order	Page	Address	Data	Procedure
1				Perform “Data setting during camera system adjustment” (Refer to page 6-10)
2				Perform “Picture frame setting” (Refer to page 6-10)
3	79	F3	Read	Note down the data
4	79	F3	66 Write	
5	79	EB	Read	Note down the data
6	79	EB	FF Write	
7	60	37	25 Set	
8	60	01	0F Write	
9	60	02	Read	Check the data changes to “01”.
10	10	08	Read	Read the data (Upper 1byte).
11	10	09	Read	Read the data (Lower 1byte).
12				This 2byte data (Note 2) is named D1.
13	10	0A	Read	Read the data (Upper 1byte).
14	10	0B	Read	Read the data (Lower 1byte).

Order	Page	Address	Data	Procedure
15				This 2byte data (Note 2) is named D2.
16	75	9A	Read	Note down the data.
17	75	9A	84 Write	
18	60	37	23 Set	
19	60	01	0F Write	
20	60	02	Read	Check the data changes to “01”.
21	10	08	Read	Read the data (Upper 1byte).
22	10	09	Read	Read the data (Lower 1byte).
23				This 2byte data (Note 2) is named D3.
24				Calculate S1 using following equations. (hexadecimal calculation) $S1 = D1 - D3$
25				Check that the S1 satisfies the specified value 1.
26	10	0A	Read	Read the data (Upper 1byte).
27	10	0B	Read	Read the data (Lower 1byte).
28				This 2byte data (Note 2) is named D4.
29				Calculate S2 using following equations. (hexadecimal calculation) $S2 = D2 - D4$
30				Check that the S2 satisfies the specified value 2.
31	60	01	00 Write	
32	75	10	Read	Note down the data.
33	75	10	FF Write	
34	79	70	Read	Note down the data.
35	79	70	53 Write	
36	60	37	24 Set	
37	60	01	0F Write	
38	60	02	Read	Check the data changes to “01”.
39	10	08	Read	Read the data (Upper 1byte).
40	10	09	Read	Read the data (Lower 1byte).
41				This 2byte data (Note 2) is named D5.
42				Calculate S3 using following equations. (hexadecimal calculation) $S3 = D1 - D5$

Order	Page	Address	Data	Procedure
43				Check that the S3 satisfies the specified value 3.
44	10	0A	Read	Read the data (Upper 1byte).
45	10	0B	Read	Read the data (Lower 1byte).
46				This 2byte data (Note 2) is named D6.
47				Calculate S4 using following equations. (hexadecimal calculation) $S4 = D2 - D6$
48				Check that the S4 satisfies the specified value 4.
49	60	01	00 Write	
50	79	70	70 Write	
51	60	37	24 Set	
52	60	01	0F Write	
53	60	02	Read	Check the data changes to "01".
54	10	08	Read	Read the data (Upper 1byte).
55	10	09	Read	Read the data (Lower 1byte).
56				This 2byte data (Note 2) is named D7.
57				Calculate S5 using following equations. (hexadecimal calculation) $S5 = D1 - D7$
58				Check that the S5 satisfies the specified value 5.
59	10	0A	Read	Read the data (Upper 1byte).
60	10	0B	Read	Read the data (Lower 1byte).
61				This 2byte data (Note 2) is named D8.
62				Calculate S6 using following equations. (hexadecimal calculation) $S6 = D2 - D8$
63				Check that the S6 satisfies the specified value 6.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	75	9A	Write	Write the data noted down at step 16.
2	75	10	Write	Write the data noted down at step 32.
3	79	70	Write	Write the data noted down at step 34.
4	60	37	00 Set	
5	60	01	00 Write	
6	79	F3	Write	Write the data noted down at step 3.
7	79	EB	Write	Write the data noted down at step 5.
8				Release "Data setting during camera system adjustment" (Refer to page 6-10)

13. Strobe Adjustment

Adjust the light value and white balance when strobe light flashed.

Mode	CAMERA
Subject	Flash adjustment box (Note 2) (50 cm from the front of lens)
Measurement Point	Data of page: 6F, address: DA, E8 and EA
Adjustment Page	6F
Adjustment Address	B6, B7 and DA to EF
Specified value	07 to 0F

Note 1: Perform this adjustment in the Flash adjustment box.

Note 2: Refer to "4. Preparing the Flash adjustment box". (See page 6-6)

Note 3: "Strobe Adjustment" is available only once after the power is turned on. If the adjustment is retried, press the RESET switch at the bottom of the set using a thin and long pin.

Note 4: Check that the data of page: 60, address: 02 is "00". If not, press the RESET switch at the bottom of the set using a thin and long pin.

Switchen setting:

1) FLASH (Control button) ON

Adjusting method:

Order	Page	Address	Data	Procedure
1				Perform "Data setting during camera system adjustment" (Refer to page 6-10)
2	60	2C	01 Set	
3	60	92	FF Set	
4	60	93	FF Set	
5	60	01	79 Write	
6	60	07	Read	Check the data changes to "01".
7	60	01	67 Write	Check the flashing.
8	60	02	Read	Check the data changes to "01".
9	6F	E8	Read	Check that the data satisfied the specified value.
10	60	01	00 Write	
11	60	E1	Read	Check the data changes to "02".
12	60	01	67 Write	Check the flashing.
13	60	02	Read	Check the data changes to "01".
14	60	01	00 Write	
15	60	E1	Read	Check the data changes to "02".
16	60	01	B9 Write	Check the flashing. (Note 5)
17	60	02	Read	Check the data changes to "01".
18	60	01	00 Write	

Order	Page	Address	Data	Procedure
19	60	E1	Read	Check the data changes to "02".
20	60	01	E7 Write	Check the flashing.
21	60	02	Read	Check the data changes to "01".
22	60	01	00 Write	
23	6F	DA	Read	Check that the data satisfied the specified value.
24	6F	EA	Read	Check that the data satisfied the specified value.

Note 5: The adjustment data will be automatically input to page: 6F, address: B6, B7 and DB to EF.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	60	92	00 Set	
2	60	93	00 Set	
3	60	2C	00 Set	
4				Release "Data setting during camera system adjustment" (Refer to page 6-10)

1-4. LCD SYSTEM ADJUSTMENTS

Data Setting During LCD System Adjustments

Perform the following data setting before the LCD system adjustments.

It is not necessary to perform the following data setting every time when you perform some item of LCD system adjustment continuously unless the power is turned off. Only when the power is turned off during this adjustments, perform the data setting again, then continue the adjustment.

Data setting method:

Order	Page	Address	Data	Procedure
1	00	01	01 Set	
2	2F	11	E0 Write	
3	2F	12	BC Write	
4	20	00	29 set	
5	20	01	29 Write	(Note)
6	00	01	01 Set	
7	2F	21	03 Write	
8	4F	02	0C Write	

Note: At this time, the set is reset and the power is turns off once and then on again. Accordingly, the message “Receive Packet Error” is displayed on the SEUS screen, and the SEUS goes in “disconnect” state, but this is not a trouble.

Click **Connect** on the SEUS screen to restore the “connected” state.

After completing the LCD system adjustments,
release the data setting:

Order	Page	Address	Data	Procedure
1	4F	02	00 Write	
2	2F	21	00 Write	
3	2F	12	2C Write	
4	2F	11	60 Write	
5	00	01	00 Set	

1. LCD Initial Data Input (1)

Mode	PLAY
Signal	Arbitrary
Adjustment Page	4F
Adjustment Address	80, 82 to 89 and 8D to 8F

Input method:

- 1) Select page: 00, address: 01, and set data: 01.
- 2) Select page: 4F, and write the data given in the following table.

Address	Data	Remark
80	97	Fixed value
82	95	V-COM Adjustment
83	BF	Bright Adjustment
84	00	Fixed value
85	38	PSIG Adjustment
86	8C	White Balance Adjustment
87	80	
88	5A	Contrast Adjustment
89	33	VG Center Adjustment
8D	02	
8E	6E	Fixed value
8F	00	

Processing after Completing Input:

- 1) Select page: 00, address: 01, and set data: 00.

2. LCD Initial Data Input (2)

Mode	PLAY
Signal	Arbitrary
Adjustment Page	5F
Adjustment Address	F0 to FC

Input method:

- 1) Select page: 00, address: 01, and set data: 01.
- 2) Select page: 5F, and write the data given in the following table.

Address	Data	Remark
F0	00	
F1	00	
F2	90	
F3	FF	
F4	00	
F5	1F	
F6	17	
F7	38	
F8	28	
F9	00	
FA	40	
FB	40	
FC	40	

Fixed value

Processing after Completing Input:

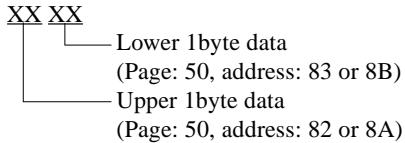
- 1) Select page: 00, address: 01, and set data: 00.
- 2) Press the RESET switch at the bottom of the set using a thin and long pin.

3. VG Center Adjustment

Set the center of VG signal for driving the LCD to the specified value.

Mode	PLAY
Signal	Arbitrary
Measurement Point	Data of page: 50, address: 82, 83, 8A and 8B (2byte data) (Note 1)
Adjustment Page	4F
Adjustment Address	89
Specified Value	VG = 1FC to 204

Note 1: 2byte data is upper 1byte data and lower 1byte data.



Adjusting method:

Order	Page	Address	Data	Procedure
1				Perform "Data setting during LCD system adjustment" (Refer to page 6-22)
2	40	89	03 Set	
3	4F	89	33 Write	
4	50	90	01 Set	
5	50	90	00 Set	
6	50	82	Read	Read the data (Upper 1byte).
7	50	83	Read	Read the data (Lower 1byte).
8				This 2byte data (Note 1) is named VG1.
9	50	8A	Read	Read the data (Upper 1byte).
10	50	8B	Read	Read the data (Lower 1byte).
11				This 2byte data (Note 1) is named VG2.
12				Calculate VG using following equations. (hexadecimal calculation) $VG = (VG1 + VG2) \div 2$
13				Check that the VG satisfies the specified value. (Note 2)

Note 2: When VG does not satisfy the specified value, select page: 4F, address: 89, and write the different data (refer to the following table), then retry the procedure from 4 to 13.

VG is smaller than the specified value	Increase the data
VG is larger than the specified value	Decrease the data

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	40	89	00 Set	
2				Release "Data setting during LCD system adjustment" (Refer to page 6-22)

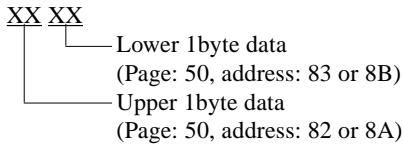
4. Bright Adjustment

Set the amplitude of the RGB decoder for driving the LCD to the specified value.

If deviated, the LCD screen image will be blackish or saturated (whitish).

Mode	PLAY
Signal	Arbitrary
Measurement Point	Data of page: 50, address: 82, 83, 8A and 8B (2byte data) (Note 1)
Adjustment Page	4F
Adjustment Address	83
Specified Value	VG = 1F9 to 201

Note 1: 2byte data is upper 1byte data and lower 1byte data.



Adjusting method:

Order	Page	Address	Data	Procedure
1				Perform "Data setting during LCD system adjustment" (Refer to page 6-22)
2	40	89	03 Set	
3	4F	83	BF Write	
4	50	90	01 Set	
5	50	90	00 Set	
6	50	82	Read	Read the data (Upper 1byte).
7	50	83	Read	Read the data (Lower 1byte).
8				This 2byte data (Note 1) is named VG1.
9	50	8A	Read	Read the data (Upper 1byte).
10	50	8B	Read	Read the data (Lower 1byte).
11				This 2byte data (Note 1) is named VG2.
12				Calculate VG using following equations. (hexadecimal calculation) $VG = VG1 - VG2$ (VG: absolute value)
13				Check that the VG satisfies the specified value. (Note 2)

Note 2: When VG does not satisfy the specified value, select page: 4F, address: 83, and write the different data (refer to the following table), then retry the procedure from 4 to 13.

VG is smaller than the specified value	Increase the data
VG is larger than the specified value	Decrease the data

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	40	89	00 Set	
2				Release "Data setting during LCD system adjustment" (Refer to page 6-22)

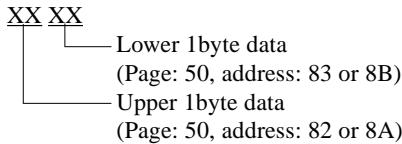
5. Contrast Adjustment

Set the level of the VIDEO signal for driving the LCD to the specified value.

If deviated, the LCD screen image will be blackish or saturated (whitish).

Mode	PLAY
Signal	Arbitrary
Measurement Point	Data of page: 50, address: 82, 83, 8A and 8B (2byte data) (Note 1)
Adjustment Page	4F
Adjustment Address	88
Specified Value	VG = 91 to 99

Note 1: 2byte data is upper 1byte data and lower 1byte data.



Adjusting method:

Order	Page	Address	Data	Procedure
1				Perform "Data setting during LCD system adjustment" (Refer to page 6-22)
2	40	89	01 Set	
3	4F	88	5A Write	
4	50	90	01 Set	
5	50	90	00 Set	
6	50	82	Read	Read the data (Upper 1byte).
7	50	83	Read	Read the data (Lower 1byte).
8				This 2byte data (Note 1) is named VG1.
9	50	8A	Read	Read the data (Upper 1byte).
10	50	8B	Read	Read the data (Lower 1byte).
11				This 2byte data (Note 1) is named VG2.
12				Calculate VG using following equations. (hexadecimal calculation) $VG = VG1 - VG2$ (VG: absolute value)
13				Check that the VG satisfies the specified value. (Note 2)

Note 2: When VG does not satisfy the specified value, select page: 4F, address: 88, and write the different data (refer to the following table), then retry the procedure from 4 to 13.

VG is smaller than the specified value	Decrease the data
VG is larger than the specified value	Increase the data

Processing after Completing Adjustment:

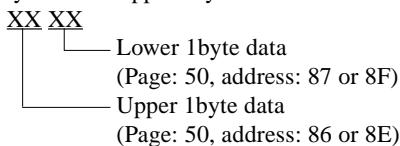
Order	Page	Address	Data	Procedure
1	40	89	00 Set	
2				Release "Data setting during LCD system adjustment" (Refer to page 6-22)

6. PSIG Adjustment

Set the amplitude of the pre-charge pulse for driving the LCD to the specified value.

Mode	PLAY
Signal	Arbitrary
Measurement Point	Data of page: 50, address: 86, 87, 8E and 8F (2byte data) (Note 1)
Adjustment Page	4F
Adjustment Address	85
Specified Value	VP = 14C to 154

Note 1: 2byte data is upper 1byte data and lower 1byte data.



Adjusting method:

Order	Page	Address	Data	Procedure
1				Perform "Data setting during LCD system adjustment" (Refer to page 6-22)
2	40	89	03 Set	
3	4F	85	38 Write	
4	50	90	01 Set	
5	50	90	00 Set	
6	50	86	Read	Read the data (Upper 1byte).
7	50	87	Read	Read the data (Lower 1byte).
8				This 2byte data (Note 1) is named VP1.
9	50	8E	Read	Read the data (Upper 1byte).
10	50	8F	Read	Read the data (Lower 1byte).
11				This 2byte data (Note 1) is named VP2.
12				Calculate VP using following equations. (hexadecimal calculation) $VP = VP1 - VP2$ (VP: absolute value)
13				Check that the VP satisfies the specified value. (Note 2)

Note 2: When VP does not satisfy the specified value, select page: 4F, address: 85, and write the different data (refer to the following table), then retry the procedure from 4 to 13.

VP is smaller than the specified value	Increase the data
VP is larger than the specified value	Decrease the data

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	40	89	00 Set	
2				Release "Data setting during LCD system adjustment" (Refer to page 6-22)

7. V-COM Adjustment

Set the DC bias of the common electrode drive signal of LCD to the specified value.

If deviated, the LCD display will be move, producing flicker and conspicuous vertical lines.

Mode	PLAY
Signal	Arbitrary
Measurement Point	Check on LCD screen
Measuring Instrument	
Adjustment Page	4F
Adjustment Address	82
Specified Value	The brightness difference between the section-A and section-B is minimum

Note: Perform “Bright Adjustment”, “Contrast Adjustment” and “PSIG Adjustment” before this adjustment.

Adjusting method:

Order	Page	Address	Data	Procedure
1				Perform “Data setting during LCD system adjustment” (Refer to page 6-22)
2	40	89	42 Set	
3	4F	82		Change the data so that brightness of the section A and section B is equal.
4	4F	82	Write	Subtract 3 from the data, and write this data.

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	40	89	00 Set	
2				Release “Data setting during LCD system adjustment” (Refer to page 6-22)

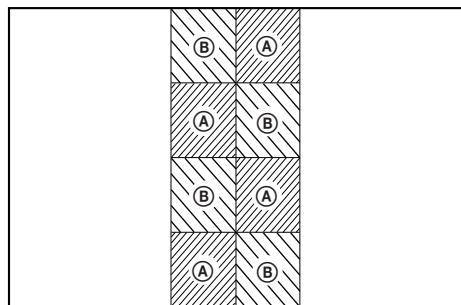


Fig. 6-1-9

8. White Balance Adjustment

Correct the white balance.

If deviated, the LCD screen color cannot be reproduced.

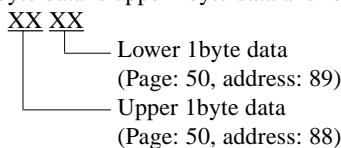
Note: Check the white balance only when replacing the following parts. If necessary, adjust them.

1. LCD901 (LCD panel)
2. IC401

8-1. White Balance Adjustment (VR)

Mode	PLAY
Signal	Arbitrary
Measurement Point	Data of page: 50, address: 88 and 89 (2byte data) (Note 1)
Adjustment Page	4F
Adjustment Address	86
Specified Value	VR = EB to F3

Note 1: 2byte data is upper 1byte data and lower 1byte data.



Adjusting method:

Order	Page	Address	Data	Procedure
1				Perform "Data setting during LCD system adjustment" (Refer to page 6-22)
2	40	89	02 <input type="button" value="Set"/>	
3	4F	86	8C <input type="button" value="Write"/>	
4	50	90	01 <input type="button" value="Set"/>	
5	50	90	00 <input type="button" value="Set"/>	
6	50	88	<input type="button" value="Read"/>	Read the data (Upper 1byte).
7	50	89	<input type="button" value="Read"/>	Read the data (Lower 1byte).
8				This 2byte data (Note 1) is named VR1.
9	50	90	01 <input type="button" value="Set"/>	
10	50	90	00 <input type="button" value="Set"/>	
11	50	88	<input type="button" value="Read"/>	Read the data (Upper 1byte).
12	50	89	<input type="button" value="Read"/>	Read the data (Lower 1byte).
13				This 2byte data (Note 1) is named VR2.
14				In case of VR2 = VR1, repeat steps 9 to 13 several times.
15				Calculate VR using following equations. (hexadecimal calculation) $VR = VR1 - VR2$ (VR: absolute value)
16				Check that the VR satisfies the specified value. (Note 2)

Note 2: When VR does not satisfy the specified value, select page: 4F, address: 86, and write the different data (refer to the following table), then retry the procedure from 4 to 13.

VR is smaller than the specified value	Decrease the data
VR is larger than the specified value	Increase the data

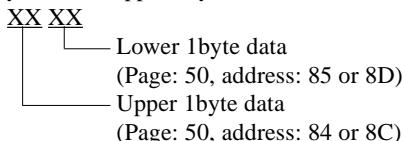
Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	40	89	00 <input type="button" value="Set"/>	
2				Release "Data setting during LCD system adjustment" (Refer to page 6-22)

8-2. White Balance Adjustment (VB)

Mode	PLAY
Signal	Arbitrary
Measurement Point	Data of page: 50, address: 84, 85, 8C and 8D (2byte data) (Note 1)
Adjustment Page	4F
Adjustment Address	87
Specified Value	VB = 112 to 11A

Note 1: 2byte data is upper 1byte data and lower 1byte data.



Adjusting method:

Order	Page	Address	Data	Procedure
1				Perform “Data setting during LCD system adjustment” (Refer to page 6-22)
2	40	89	02 Set	
3	4F	87	80 Write	
4	50	90	01 Set	
5	50	90	00 Set	
6	50	84	Read	Read the data (Upper 1byte).
7	50	85	Read	Read the data (Lower 1byte).
8				This 2byte data (Note 1) is named VB1.
9	50	8C	Read	Read the data (Upper 1byte).
10	50	8D	Read	Read the data (Lower 1byte).
11				This 2byte data (Note 1) is named VB2.
12				Calculate VB using following equations. (hexadecimal calculation) $VB = VB1 - VB2$ (VB: absolute value)
13				Check that the VB satisfies the specified value. (Note 2)

Note 2: When VB does not satisfy the specified value, select page: 4F, address: 87, and write the different data (refer to the following table), then retry the procedure from 4 to 13.

VB is smaller than the specified value	Decrease the data
VB is larger than the specified value	Increase the data

Processing after Completing Adjustment:

Order	Page	Address	Data	Procedure
1	40	89	00 Set	
2				Release “Data setting during LCD system adjustment” (Refer to page 6-22)

COVER

6-2. SERVICE MODE

2-1. APPLICATION FOR ADJUSTMENT (SEUS)

The application for adjustment (SEUS) is used to change the coefficient for calculating the signal processing or EVR data. The SEUS performs two-way communication between PC and set through the USB terminal. The two-way communication result data can be written to the nonvolatile memory.

2-1-1. Using Method of SEUS

1. Connection

- 1) Connect the HASP key to the USB terminal of the PC.
- 2) Connect the PC and set with the USB cable.
- 3) Confirm that the set starts in the USB mode.
- 4) Start the SEUS on the PC.
- 5) Click **Connect** on the SEUS screen. If the connection is normal, the SEUS screen will be as shown in Fig. 6-2-1, indicating the “connected” state.

Note: The SEUS will go in “disconnect” state, if the set is turned off (for instance, by resetting the set). In such a case, click **Connect** on the SEUS screen to restore the “connected” state.

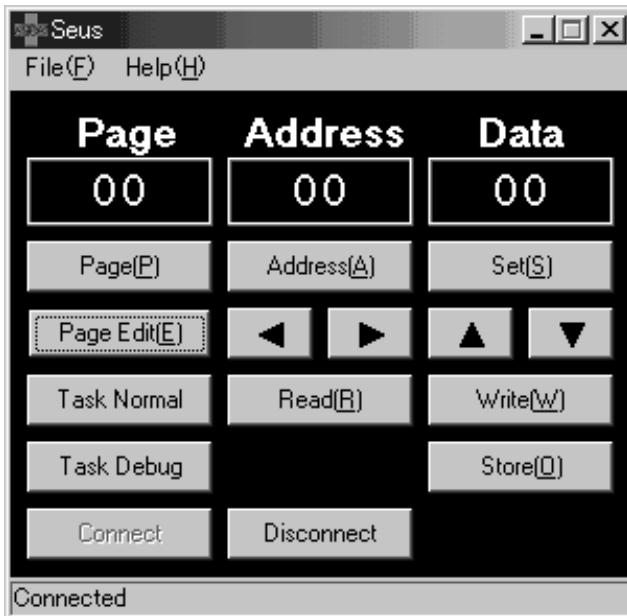


Fig. 6-2-1

2. Operation

• Page change

To change the page, click **Page** on the SEUS screen and enter the page to be changed. The page is displayed in hexadecimal notation.

• Address change

To change the address, click **Address** on the SEUS screen and enter the address to be changed. The address is displayed in hexadecimal notation.

• Data change

To change the data, click **Set** on the SEUS screen and enter the data. The data is displayed in hexadecimal notation. This operation does not write the data to the nonvolatile memory.

• Data writing

To write the data to the nonvolatile memory, click **Write** on the SEUS screen and enter the data to be written.

• Data reading

The data displayed on the SEUS screen are the data values at the time when the pages and addresses were set, and they are not updated automatically. To check the data change, click **Read** on the SEUS screen and update the displayed data.

2-1-2. Precaution on Use of SEUS

Wrong SEUS operation could clear correct adjustment data. To prevent the data clear by mistake, it is recommended to save all adjustment data by clicking **Page Edit** on the SEUS screen before starting the adjustment.



2-2. DATA PROCESS

In some adjustment items, the calculation of SEUS displayed data (hexadecimal) is needed to check the specified data or to acquire the adjustment data. In such a case, prepare a computer capable of calculating hexadecimal numbers.

Also, the data at two addresses are read, which are treated as 2 bytes of upper 1 byte and lower 1 byte (4-digit hex. number), to check the specified data.

XX XX

Displayed data at lower 1 byte address
Displayed data at upper 1 byte address

2-3. SERVICE MODE

1. Setting the Test Mode

Page 2F	Address 21
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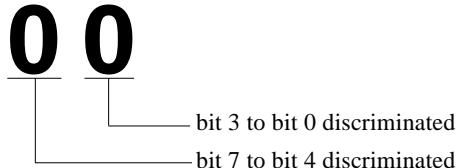
Data	Function
00	Normal
01	Forced MOVIE mode
02	Forced CAMERA mode
03	Forced PLAY mode

- Before setting the data, select page: 00, address: 01, and set data: 01.
- In the case of page 2F, writing the data by clicking **Write** on the SEUS screen causes the data to be written to the nonvolatile memory. In this case, the Test mode is not released even if the set is turned off, thus requiring extreme care.
- After the adjustment/repair finished, be sure to return the data to “00” to restore the Normal mode. Also, select page: 00, address: 01, and set data: 00.

2. Bit Value Discrimination

In the following items, the bit values must be discriminated from the data displayed on the SEUS. Whether bit values are “1” or “0” can be discriminated from the table shown below.

Data displayed on SEUS



Display on the SEUS	Bit values			
	bit3 or bit7	bit2 or bit6	bit1 or bit5	bit0 or bit4
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
Ⓐ	8	1	0	0
Ⓑ	9	1	0	1
Ⓐ	A	1	0	1
Ⓑ	B	1	0	1
Ⓒ	C	1	1	0
Ⓓ	D	1	1	0
Ⓔ	E	1	1	1
Ⓕ	F	1	1	1

Example: If the displayed data is “8E”, bit 7 - bit 4 values can be discriminated from block (A), and also bit 3 - bit 0 values from block (B).

3. Switch Check (1)

Page 20	Address 80
---------	------------

Bit	Function	When bit value=1	When bit value=0
0	POWER SW (SW-376 flexible) (S002)	OFF	ON
1			
2	LENS COVER SW (OP-17 flexible) (S101)	CLOSE	OPEN
3	SHUTTER button (XAE LOCK SW) (SW-376 flexible) (S003)	OFF	ON
4	SHUTTER button (XSHUTTER) (SW-376 flexible) (S003)	OFF	ON

Using method:

- 1) Select page: 20, address: 80.
- 2) By discriminating the bit value of read data, the state of the switches can be discriminated.

4. Switch Check (2)

Page 20	Addresses 90, 91
---------	------------------

Using method:

- 1) Select page: 20, addresses: 90 and 91.
- 2) By discriminating the read data, the pressed key can be discriminated.

Address	Data				
	00 to 09	0A to 21	22 to 42	43 to 6D	6E to FF
90 (MODE DIAL) (IC401 ⑤④)	MOVIE (SW-376 flexible) (S001)	STILL (SW-376 flexible) (S001)	PLAY (SW-376 flexible) (S001)		
91 (KEY AD0) (IC401 ⑤⑤)	MENU (PD-174 board) (S480)	SCENE (DOWN) (PD-174 board) (S481)	FLASH (UP) (PD-174 board) (S482)	EXEC (PD-174 board) (S483)	No key input

5. LED Check

Page 20	Address 04	Data 02
---------	------------	---------

Using method:

- 1) Select page: 20, address: 04, and write data: 02.
- 2) Check that all LED (MS ACCESS, POWER, FLASH, SELF TIMER) are lit.
- 3) Select page: 20, address: 04, and write data: 00

6. Self Diagnosis Code

Display Code	Countermeasure	Cause	Caution Display During Error
C:32:□□	Turn the power off and on again.	Trouble with hardware.	SYSTEM ERROR
C:13:□□	Format the “Memory stick”.	Unformatted memory stick is inserted.	FORMAT ERROR
	Insert a new “Memory Stick”.	Memory stick is broken.	MEMORY STICK ERROR
E:61:□□	Checking of lens drive circuit.	When failed in the focus initialization.	—
E:91:□□	Checking of flash unit or replacement of flash unit.	Abnormality when flash is being charged.	